Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 p 1
7. Edition
En

Testoil-ISO 4113

PES 6 A 95 D 410 LS 2542 Z RQV 250-1100 AB 1038 DL (1)
.. LS 2542 RQ 250/1100 AB 1049 DL (2)
.. LS 2542 RQ 250/1050 AB 965 DL (3)

Komb.-Nr. 0 400 846 425 (1) MAN-Nr. 1-7960
0 400 846 427 (2) MAN-Nr. 1-7946
0 400 846 418 (3) MAN-Nr. 1-7941

supersedes 7.84
company: MAN
engine: D2566
(1) MSFV-162 kW/2200 min/1
(2) MFOR-162 kW/2200 min/1
(3) MF -172 KW/2100 min/1

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,3+0,1	11,3 - 11,5	0,3(0,6)	12,0-12,1	12,9 - 13,1	n 1050
250	5,9-6,1	0,8 - 1,5	0,3(0,5)	6,5-6,7	1,1 - 1,7	

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

(1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140	14,4-17,6	-	-	-	ca.13	100	min.7,5	200	0,5-1,2
							250	5,9-6,1	700	4,3-4,6
							320-380	=2,0	1140	8,3
ca.42	10,3	1140-1150					450	0-1		
	4,0	1175-1205								
	1300	0 - 1,0				(3a)				

Torque control travel a = 0,35 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	112,5-114,5 (110,5-116,5)	1140-1150*	700	102,5-105,5 (100,5-107,5)	100	124,0-134,0	1100	11,3
							700	11,7
			500	max. 106,5 (108,5)	250	6,0 mm RW	500	11,7
						100-170 (80-190)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.84

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A1

B. Governor Settings

(2) MAN 11,1 p 1

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,2	1145-1160	250	6,0	100	min.7,5	1100	11,2-11,3
								250	5,9-6,1	845	11,2-11,5
				4,0	1185-1215					750	11,4-11,6
								360-400 =2,0		600	11,6-11,7

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(2) 1100	112,5 - 114,5 (110,5 - 116,5)		700	102,5 - 105,5 (100,5 - 107,5)	100	125,0-135,0 (122,0-138,0) = 15,0-16,0mmRW
			500	max. 106,5 (max. 108,5)	250	6,0 mm RW

Checking values in brackets

Tostal ISO 4113

B. Governor Settings

(3)

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	11,0	1095-1110	250	6,6	100	min. 8,1	-	-
				4,0	1145-1170			250	6,5-6,7		
								375-415=2,0			
1250	0 - 1							450	0 - 1		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(3) 1050	127,5 - 129,5 (125,5 - 131,5)		500	max. 113,5 (115,5)	100	124,0 - 134,0 6,0 mm RW

Checking values in brackets

A2

4L

Test Specifications Fuel Injection Pumps and Governors

① WPP 001/4 MAN 16,0 d

9. Edition En

Testoil-ISO 4113

PE10A90D520/5 LS 2515

RQV 250-1250 AB993DR
RQ 250/1250 AB832DR ./.
RQ 250/1250 AB992DR ./.

supersedes 3.85
company: MAN
engine: D 2530 MF

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2
0 -45-72-117-144-189-216-261-288-333° ±0,5°(0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5-11,6	10,2 - 10,3	0,3(0,45)	11,5-11,6	10,3- 10,4	
250	7,4-7,6	0,9- 1,5	0,2(0,4)	7,4-7,6	0,9- 1,5	
800/500	- - -	C, 4-5 -	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

RQV..993 DR

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1275	14,4-17,4	-	-	-	ca.13	100	min.7,2	200	0,5-1,2
							250	5,6-5,8	700	4,4-4,8
- - - -	- - -	- - - - - - -					310-370	= 2,0	270	8,3
ca.48	10,5	1290-1300					450	0 - 1		
	4,0	1365-1395								
	1450	0 - 1,0				(3a)				

Torque control travel a =0,6+0,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1250	102,5-103,5 (100,5-105,5)	1290 - 1300*	800	95,5- 98,5 (93,5-100,5)	100	135,0-145,0	1250	11,5+0,1
					250	7,0 mm RW	900	11,9+0,3
			500	90,0- 94,0 (88,0- 96,0)			500	12,3+0,1
					100-170 (80-190)			./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

5.85

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrustung.

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B. Governor Settings

RQ..832 DR

Checking of slider PRG check ①		Full-load speed regulation			④	Idle speed regulation			⑤	Torque control ③	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,1	100	min.7,6	-	-
				4,0	1345-1375			250	6,0-6,2		
				1500	0 - 1,0			360-420	=2,0		
								500	0 - 1		

Torque-control travel on flyweight assembly dimension a = 0 mm

Speed regulation At 1295-1310 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1250	101,5 - 102,5		500	78,0 - 86,0	100	129,25 - 139,25
	(99,5 - 104,5)			(76,0 - 88,0)	250	7 mm RW

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

RQ..992 DR

Checking of slider PRG check ①		Full-load speed regulation			④	Idle speed regulation			⑤	Torque control ③	
		Setting point		Test specifications		Setting point		Test specifications			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,0	100	min.7,5	1250	11,5-11,6
				4,0	1365-1395			250	5,9-6,1	1000	11,8-12,0
				1500	0 - 1,0			360-400	=2,0	600	12,2-12,4
								500	0 - 1		

Torque-control travel on flyweight assembly dimension a = 0,25 mm

Speed regulation At 1295-1310 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
1250	102,5 - 103,5	-	800	95,5 - 98,5	100	135,0-145,0
	(100,5 - 105,5)			(93,5 - 100,5)		(132,0-148,0) = 18,3-19,3 mm RW
			500	90,0 - 94,0		
				(88,0 - 96,0)	250	7,0 mm RW

Checking values in brackets

A4

En

A4

Test Specifications Fuel Injection Pumps ① and Governors

WPP001/4KHD1i1
2. Ausgabe

En

Testoil-ISO 4113

PES6A80D410/3 RS2527 RQV 300-1400AB951DL (1-2)
RQ.. 935DL (3-6)

supersedes 1.80
company KHD
engine F6L912/913

Hinweise für Pos. 2 und 6 Seite 4!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,0+0,1	6,8 - 7,0	0,2(0,35			
300	8,0-8,2	0,9 - 1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

RQV 300-1400 AB951DL (1-2)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1470	15,2-17,8	-	-	-	ca.12	100	min.7,5	300	0,7-1,3
	1700	0 - 1					300	5,9-6,1	900	4,0-4,4
ca.65	11,0	1440-1450					530-590	=2,0		
	4,0	1545-1575					650	0,1	1400	8,3
						410-650 (3a)				

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
(1) 1400	69,0 - 70,0 (67,5 - 71,5)	1440-1450*	700	64,5 - 66,5 (63,0 - 68,0)	100	17,3-17,6 mm RW	1400	12,0-12,1
							1150	12,3-12,6
							700	12,8-13,0

Checking values in brackets

* 1 mm less control rod travel than col 2

1.82

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BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

B. Governor Settings

RQ300/1400 AB935DL (2)

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
700	19,2-20,8	700	20,0	11,0	1445-1460	300	9,0	100	min.10,5	1400	12,0-12,1
VH=49°				4,0	1540-1570			300	8,9-9,1	950	12,5-12,8
								590-630	= 2,0		
								750	max.1,0	700	13,0-13,2

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation At 1445-1460 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(3)					-	-
1400	69,0 - 70,0		700	64,5 - 66,5		
	(67,5 - 71,5)			(63,0 - 68,0)		

Checking values in brackets

B. Governor Settings

RQ 300/1325 AB935DL (4)

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
800	19,2-20,8	800	20,0	10,3	1370-1385	300	9,1	100	min.10,6	1325	11,3-11,4
		VH ca.	49°	4,0	1450-1480			300	9,0-9,2	1000	11,5-11,6
1350	Abregel-beginn							590-630	=2,0		
1600	0 - 1							700	0 - 1	750	12,4-12,5

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) (2)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min	cm³/-1000 strokes	rev/min	rev/min	cm³/-1000 strokes	rev/min	cm³/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(4)						
1325	55,5 - 56,5			51,5 - 54,5	100	119,5 - 129,5
	(54,0 - 58,0)		750	(50,0 - 56,0)		

Checking values in brackets

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
800	19,2-20,8	800	20,0	11,5	1295-1310	300	8,5	100	min.10	1250	12,5-12,6
VH=	49°			4,0	1370-1400			300	8,4-8,6	950	13,0-13,3
								580-620	=2,0	800	13,5-13,6
								750	max. 1,0		

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7
(5) 1250	66,5 - 67,5 (65,0 - 69,0)	-	800	64,0 - 66,0 (62,5 - 67,5)	-	-

Checking values in brackets

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque-control travel on flyweight assembly dimension a = mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min	cm^3/-1000 strokes	rev/min	rev/min	cm^3/-1000 strokes	rev/min	cm^3/1000 strokes / Control rod travel mm
1	2	3	4	5	6	7

Checking values in brackets

A 7

En

Hinweise:

Bei Pos. 2 - PES 6 A 80 D 410/3 RS 2527 mit RQV 300-1400 AB951DL
und Pos. 6 - PES 6 A 80 D 410/3 RS 2527 mit RQ 300/1250 AB935DL

werden vom Kunden anstelle der Motorleistung teilweise eine Motor-Schlüsselzahl auf dem Typenschild des Motors angegeben.

Diese Motor-Schlüsselzahlen 1025, 1032, 1034, 1035 und 0708 ergeben eine reduzierte Vollastmenge:

n 1250 = 57,5 - 59,5 cm³/1000 H.
n 850 = 55,5 - 57,5 cm³/1000 H.

Ab Motor-Nr. 6216 324 gilt jedoch:

n 1250 = 63,5 - 65,5 cm³/1000 H.
n 850 = 60,5 - 62,5 cm³/1000 H.

Dies ist bei Neueinstellungen und Kontrollmessungen unbedingt zu beachten!

A 8

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 5,1 f

1. Edition

En

PES 5 A 80 D 410/3 RS 2347 EP/RS 325/1400 A0B 699 DL

Komb.-Nr. 9 400 093 406

1-3-5-4-2 je 72° ± 0,5° (± 0,75°)

supersedes -

company KHD

engine F5L 913

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,2+0,1	6,4-6,5	0,25(0,4)			
325	8,4-8,6	1,0-1,3	0,2(0,35)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 x =	0,3-1,0	-	-	-		325	8,3	1400	11,2-11,3
							300	8,4-9,1	700	11,8-12,1
							400	6,0-6,8	500	11,8-12,1
VHca.60	8,7	1400-1450					550	3,5-4,0		
FHmax. (2a)	4,0	1500-1530					1350	2,8-3,2		
	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1400	64,5-65,5 (63,0-67,0)	1430-1440*	700	57,0-59,0 (56,5-59,5)	100	100,0-140,0	-	-
			500	54,5-56,5 (53,5-57,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

7.86

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

A9

49

PE 10 A 95 D 610/4 LS 2452 RQV 300-1250 AB 1129 L

supersedes –
company: KHD
engine: F 10 L 413 F
228 kW (310 PS)

1 - 10 - 9 - 4 - 3 - 6 - 5 - 8 - 7 - 2
0 - 27 -72 -99 - 144-171-216-243-288-315° ± 0,5° (± 0,74°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	10,3+0,1	9,2 - 9,4	0,3(0,6)			
300	6,4-6,6	1,2 - 1,6	0,3(0,5)			
800	10,5+0,1	C, Sp.4 u. 5	0,4(0,7)			

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca.14	100	min.19,0	250	1,0-1,2
							300	6,4- 6,6	550	3,4-3,8
ca.44	9,3	1290-1300							900	5,4-5,6
	4,0	1365-1395							1250	8,0
	1475	0 - 1,0								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a) rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1250	90,5-92,5 (88,5-94,5)	1290-1300*	800	90,0-93,0 (88,0-95,0)	100	119,0-129,0	1250	10,3+0,1
							500	10,5+0,1
							800	10,5+0,1
							950	10,3+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

PES 4 AM 90 D 410 RS 2017 RQV 300-1425 AB 740 L

supersedes –
company: Daimler Benz
engine: OM 314
62,5 kW (85 PS)

1 - 3 - 4 - 2
0 - 90-180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05) 1,90-2,00 mm (from BDC) RW 10,5 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,2-6,3	0,3(0,25)			
300	6,8-7,0	0,9-1,5	0,2(0,25)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1425 1650	16,0-19,4 0-1				ca.10	100 300 570-600 750	min.7,4 5,9-6,0 =2,0 0 =1,0		
ca.61	8,7 4,0	1460-1470 1535-1565				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1400	62,5-63,5 (61,5-64,5)	1460-1470*	100	13,7-14,3 mm RW		100-220 (80-240)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.80

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB5,7w

1. Edition En

PES 6 AM 90 D 410 RS 2016 RQV 300-1425 AB 740 L

supersedes company: Daimler-Benz OM 352 engine: 96 kW (130 PS)

1 - 5 - 3 - 6 - 2 - 4 je 60°

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,85-2,05) 1,90-2,00 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,2 - 6,3	0,3(0,25)			
300	6,8-7,0	0,9 - 1,5	0,2(0,25)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1425 1650	16,0-19,4 0 - 1				ca.10 (3a)	100 300 570-600 750	min.7,4 5,8-6,0 = 2,0 0 - 1		
ca.61	8,7 4,0	1460-1470 1535-1565								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1400	62,5-63,5 (61,5-64,5)	1460-1470*			100	13,7-14,3 mm RW 100-220 (80-240)		

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.80

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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912

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7w7
1. Edition
En

PES 6 A 90 D 410 RS 25 69 RQV 300-1400 AB 1111L

supersedes

company: Daimler Benz
engine: OM 352
96 kW (130 PS)

1 - 5 - 3 - 6 - 2 - 4
0 - 60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,20-2,40) 2,25-2,35 mm (from BDC) RW 10,5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,1	5,9 - 6,0	0,3(0,45)			
	+0,1					
300	8,4-8,6	1,0 - 1,6	0,2(0,4)			
500	--------	C.SP. 4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1400	15,2-17,8				ca.15	100	min.8,5	300	1,1
	1630	0 - 1,0					300	8,4-8,6	670	3,9-4,1
							610-670 = 2,0		1450	8,1
ca.65	9,1	1440-1450				(3a)				
	4,0	1530-1560								

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1400	59,5-60,5 (57,5-62,5)	1440-1450*	500	51,5-54,5 (49,5-56,5)	100	72,25-82,25	1400	10,1-10,1
						15,1- 15,5 mm RW	1000	10,4-10,7
							630	11,1-11,3
					300	10,25-16,25	500	11,4-11,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.81

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

A13

A 13

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4
1. Edition
En

PES 6 A 100 D 410 RS 3026 EP/RSV 400-1100 A7B767L (1)
.. RS 3027 ..A28789DL(2)

supersedes
company John Deere
engine 6404A (1)
6466D (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

(1) Port closing mark 14 ° after port closing.

(2) Port closing mark 15 ° after port closing.

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10(1,95-2,15) / 1,95-2,05(1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1070	10,6	11,2-11,4	0,3(0,6)	10,8	11,0-11,2	
	+0,1			+0,1		
400	6,2-6,4	1,1- 1,5	0,3(0,5)	6,2-6,4	1,0- 1,5	
525/550	- - - -	C 4,5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0			ca.30	400	5,8		
	x = 5,75				100	min. 19		
					400	6,2-6,4		
ca.72	1110-1120=9,6				400-500	=2,0		
(2a)	1145-1150=4,0				550	0-1		
	1250 = 0,3-1,7							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1070	112,0-114,0 (110,0-116,0)	1110-1120*			100	156-176		
					400	11,5-15,5		
					1150	11,5-21,5		
					dispersion max.5(6)			./.

Checking values in brackets

* 1 mm less control rod travel than col 2

5.79

A14

A14.

The numbers denote the sequence of the tests

B. Governor Settings

① Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	④ Control-lever deflection in degrees (7)	Lower rated speed: rev/min (8)	Control rod travel mm (9)	③ Torque control: rev/min (10)	Control rod travel mm (11)
loose	800	0,3-1,0		ca.21	400	5,8	1100	10,8-10,9
	x =	3,5			100	min. 19	800	11,5-11,8
					400	6,2-6,4		
ca.44	1140-1150=9,7				450-510	=2,0	400	12,7-12,8
②a	1225-1235=4,0				600	0 - 1		
	1350	0,3-1,7						

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop, Test oil temp 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	⑥ Rotational-speed limitat. Note: changed to ...) rev/min (3)	③a Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle ⑤: rev/min (6)	cm³/1000 strokes (7)	④a Idle stop: rev/min (8)	Control rod travel mm (9)
LDA	0,7 bar		LDA	0,7 bar		**		
1100	110,0-112,0 (108,0-114,0)	1140-1150*	525	120,5-123,5 (118,5-125,5)	100	186-206		
LDA 550	0 bar		1200	23,5- 33,5	400	11,5-15,5		
	83,0-89,0 (81,0-91,0)			(18,5-38,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Testing the hydraulic start-locking device

Locking at 0,48 - 0,76 bar

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min increasing pressure - in bar gauge pressure

Pump/governor	Setting: Gauge pressure = bar	Measurement: Gauge pressure = bar	Control rod travel- mm
3027 with 789 DL	0		10,4 - 10,5
		0,11	10,8 - 10,9
		0,30	11,8 - 12,0
		0,68	12,3 - 12,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

A15

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Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4
1. Edition
En

PES 6 A 100 D 410 LS 3029; RSV 400-1100 A 2 B 2019 DL

supersedes -
company John Deere
engine 6466 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing mark cyl. 1 : 15° after port closing

Port closing at prestroke 1,95-2,05 (1,90-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0	11,5-11,7	0,3(0,5)			
400	6,2	1,0- 1,4	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,7				ca.19	400	6,0	1100	0
	x = 3,5						100	19,0-21,0	750	0,75
ca.43	1150	10,0					400	6,2		
(2a)	1200	5,0					470-530	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40° C (104° F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,70 bar	1145-1155*	LDA	0,70 bar	100	166-196		
1100	115,0-117,0	(1140-1160)	750	124,5-127,5	400	11,0-15,0		
	(114,0-118,0)			(123,5-128,5)	1200	23,5-33,5		
			LDA	0 bar				
			550	83,0- 89,0				
				(81,0- 91,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.79

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
3029 with2019 DL	0,08 - 0,11	0,46 - 0.53	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4
1. Edition
En

PES 6 A 100 D 410 RS 3031 EP/RSV 400-1100 A2 B2046D

supersedes_
company John Deere
engine 6404 A

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,05 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	11,1	11,2 - 11,4	0,3			
400	6,5	1,1 - 1,5	0,3			

Port closing mark cyl. 1 : 14° after port closing

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.21	400	6,1	1050	11,1
	x =	3,8			100	19-21	750	12,0
ca.42	1095-1105=11,1				400	6,6		
(2a)	1150	5,0			480-540	2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	1,3 bar		LDA	1,3 bar				
1050	112,0-114,0	1095-1105*	750	121,0-125,0	100	156-176		
			LDA	0 bar	400	11,5-15,5		
			550	49,0- 53,0	1150	23,5-33,5		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.79

A 18

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 550 rev/min decreasing ~~increasing~~ pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
3031 with 2046 D	0,75	0,42	11,1 9,2-9,4
Switching point (hydr. measurement)	0,75	0,45	

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 HAN 10,8 f
3. Edition

En

PE 6 A 100 D 320 RS3030 EP/RSV 350-1100 A8 B 1119 DR (1)
PE 4 A 95 D 420 RS2556 .. B 1120 DR (2)
.. RS2556 .. B 1121 DR (3)

supersedes 12.78
company MF-Hanomag
engine (1 - 0963 A2)
(2-3 - D943)

cyl.6: norm. ± 0,50
cyl.4: 1 - 2 - 4 - 3 - je 90°(± 0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,80-1,90 (1,75-1,95) mm (from BDC) RW 10,5 FB.-Diff. RW 9,0 / RW max. 5,5 - 6,5

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,5	15,0-15,2	0,3(0,5)	10,0	8,9-9,7	
	+0,1			+0,1		
350	7,3-7,5	1,3- 1,9	0,3(0,5)	6,7-6,9	1,4-2,0	
700/500		C 4- 5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

1119DR (1)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.24	350	5,5	1100	11,5-11,6
	x	5,50			100	min.19	550	11,5-11,7
ca.56	10,5	1140-1150			350	5,9-6,1	400	12,7-13,3
	4,0	1190-1220			435-495	= 2,0		
(2a)	1355	0,3 - 1,7			550	0,1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(1) 1100	150,0 - 152,0 (148,0 - 154,0)	1140-1150*			100	19 - 21mm	RW	

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

A20

A20 c

The numbers denote the sequence of the tests

B. Governor Settings

① Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	④ Control-lever deflection in degrees (7)	Lower rated speed rev/min (8)	Control rod travel mm (9)	③ Torque control rev/min (10)	Control rod travel mm (11)
loose	800	0,3-1,0		ca.21	350	5,5		± 0,1
	x	4,50			100	min.19		
ca.52	9,0	1140-1150			350	5,9-6,1	1010	10,5
	4,0	1160-1190			480-540	= 2,0		
② 2a	1350	0,3- 1,7			600	0 - 1	500	10,9

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	⑥ Rotational-speed limitat. Note: changed to ...) rev/min (3)	③a Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle ⑤: rev/min (6)	cm³/1000 strokes (7)	④a Idle stop: rev/min (8)	Control rod travel mm (9)
(2) 1100	93,0-95,0 (91,0-97,0)	1140-1150*	700	100,0-103,0 (98,0-105,0)	100	19-21mmRW		
			500	92,0- 94,0 (90,0- 96,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Cold-start test according to VDT-I-DAF 004, see page 2

B. Governor Settings

① Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	④ Control-lever deflection in degrees (7)	Lower rated speed rev/min (8)	Control rod travel mm (9)	③ Torque control rev/min (10)	Control rod travel mm (11)
loose	800	0,3-1,0		ca.22	350	6,8		± 0,1
	x =	4,5			100	min.19	1100	9,9
ca. 52	8,9	1140-1150			350	7,2-7,4		
	4,0	1165-1195			525-585	= 2,0	1010	10,4
② 2a	1370	0,3 - 1,7			700	0 - 1	500	10,9

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	⑥ Rotational-speed limitat. Note: changed to ...) rev/min (3)	③a Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle ⑤: rev/min (6)	cm³/1000 strokes (7)	④a Idle stop: rev/min (8)	Control rod travel mm (9)
(3) 1100	87,5-89,5 (85,5-91,5)	1140-1150*	700	91,5-94,5 (89,5-96,5)	100	19-21mmRW		
			500	83,0-85,0 (81,0-87,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,3 a
1. Edition
En

VE 4/9 F 2100 L 37 (P) Overflow temperature 45° C
0 460 494 020 021

supersedes -
company: Opel
engine: 2,3 l

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000	7,4-7,8	mm		
1.2 Supply-pump pressure	2000	7,4-8,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1250	41,5-42,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	300	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.54,0	cm³/1000 strokes		
1.6 Start	2440	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	2000	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1250	2000
	mm	0,8-1,8(0,6-2,0)	3,9-4,7(3,6-5,0)	(6,9-8,3)
2.2 Supply pump	n = rev/min	400		
	bar (kgf/cm²)	3,3-3-9		
Overflow delivery	n = rev/min	500		2100
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2520	max. 6,0		
	2440		(10,0-18,0)	
	2130	34,9-37,5	(33,9-38,5)	
	2000	35,7-38,3	(34,7-39,3)	
	1250		(39,7-44,3)	
	600	34,5-37,5	(33,0-39,0)	
switch-off electr.	2100	0		
Idle stop	400-500	0		
	300		(4,0-12,0)	
End stop	380			
	440			
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12 V.		

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	max.4,9
K	20,0-22,0
L	11,1-14,9

Observations
Clearance between idle position and stop for increased idling: 0,5-1,0 mm

C1

BOSCH

CAC

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,3b
1. Edition
En

VE 4/9 F 2000 L 37-1
0 460 494 046

Overflow temperature 45° C

supersedes –
company: Opel
engine: TL 0125-2,3 l

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000	7,9-8,3	mm		
1.2 Supply-pump pressure	2000	6,9-7,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1250	41,5-42,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	300	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.54,0	cm³/1000 strokes		
1.6 Start	2440	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	2000	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1250	2000
	mm	1,5-2,5(1,3-2,7)	4,4-5,2(4,1-5,5)	(7,7-8,8)
2.2 Supply pump	n = rev/min	600	1250	
	bar (kgf/cm²)	3,6-4,2	5,1-5,7	
Overflow delivery	n = rev/min	500		2000
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2520	max. 12,0		
	2440		(10,0-18,0)	
	2000	34,2-36,8	(33,2-37,8)	
	1250		(39,7-44.3)	
	600	34,5-37,5	(33,0-39,0)	
switch-off	2000	0		
Idle stop	400-500	0		
	300		(4,0-12,0)	
End stop	380			
	440			

2.4 Solenoid	cut-in voltage	min. 10,0 V

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,4-5,6
MS	1,7-1,9
SVS	max.3,4
⅄ K	20,2-22,2
⅄ L	7,5-10,8

Observations

C2

C2

⑥

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 v 3
1. Edition
En

VE 4/9 F 1000 R 85-5
0 460 494 092

Overflow temperature 45° C

supersedes -
company: VWW
engine: 068.5

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	1,6-2,0	mm		
1.2 Supply-pump pressure	1000	3,7-4,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	24,5-25,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	--	--	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0	cm³/1000 strokes		
1.6 Start	1100	12,0-18,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600-750	1000
	mm	Start	(1,1-2,5)
2.2 Supply pump	n = rev/min	400	
	bar (kgf/cm²)	2,1-2,7	
Overflow delivery	n = rev/min	500	1000
	cm³/10 s	55-110(40-125)	55-1100(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1200-1280	0		
	1100		(11,0-19,0)	
	1000		(22,7-27,3)	
	600	18,0-21,0	(16,5-22,5)	
switch-off	1000	0		
Idle stop	--			
End stop	400			
	500			
2.4 Solenoid	cut-in voltage	min. 10,0 V		
		rated voltage 12 V.		

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.2,5
+ FH	1,8-2,4
A K	18,4-20,4
B L	5,9-8,3

Observations

+ operating stroke (cold-start accel.)

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 3,6a
1. Edition
En

VE 6/11 F 2100 L 63
0 460 416 014

Overflow temperature 45° C

supersedes –
company: VM Cento
engine: HR 692 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02(0,04)

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1800	6,6-7,0	mm	0,67	
1.2 Supply-pump pressure	1800	6,6-7,2	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	600	36,0-40,0	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1500	47,5-48,5	cm³/1000 strokes	0,67	
1.4 Idle regulation	450	10,0-14,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 42,0	cm³/1000 strokes	0	
1.6 Start	2400	22,0-30,0	cm³/1000 strokes	0,67	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1800	2150
LDA=0,67 bar	mm	2,3-3,1(2,0-3,4)	4,9-5,5(4,5-5,9)	(6,1-7,5)	7,9-8,6
2.2 Supply pump	n = rev/min	400			2100
LDA=0,67 bar	bar (kgf/cm²)	1,7-2,3			7,8-8,4
Overflow delivery	n = rev/min	500			2100
	cm³/10 s	55-110(40-125)			55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2450	9,0-15,0	(7,5-16,5)	0,67
	2400		(21,5-30,5)	0,67
	2150	43,2-45,8	(41,7-47,2)	0,67
	2100	43,9-46,5	(42,5-47,9)	0,67
	1500		(45,3-40,7)	0,67
	+600	38,5-41,5	(37,3-42,7)	0,27
	600		(34,6-41,4)	0
switch-off	2100	0		
Idle stop	620-700	0		0
	450		(7,5-16,5)	0
End stop	400			
	470			

2.4 Solenoid — cut-in voltage: min. 10,0 V, rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	6,3-6,5
MS	0,9-1,1
SVS	max.2,2
	1,8-2,4
K	20,2-22,2
L	10,8-13,1

Observations

+ LDA-stroke 4,0 mm. Use adjusting nut (46) to correct.

C4

C4

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,0 a1
1. Edition
En

VE 5/10 F 2400 L 35 - 2 Overflow temperature 45° C
0 460 405 003; 004

supersedes –
company: VWW
engine: Audi 100

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02(0,04)

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	2,6-3,0	mm		
1.2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	33,5-34,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	1006	min.56,0	cm³/1000 strokes		
1.6 Start	2500	22,0-26,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2400
	mm	1,4-2,4(1,2-2,6)	(2,1-3,5)	5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min	500		2400
	bar (kgf/cm²)	2,8-3,4		7,5-8,1
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650	7,0-11,0	(5,0-13,0)	
	2500		(20,0-28,0)	
	2400	28,0-31,0	(27,2-31,8)	
	1400		(31,7-36,3)	
	750	24,5-27,5	(23.0-29,0)	
switch-off	2400	0		
Idle stop	500	max. 3,0		
	375		(4,0-12,0)	
End stop	400	min. 23,0		
	500	max. 23,0		

2.4 Solenoid	cut-in voltage	min. 10,0 V

3. Dimensions

for assembly and adjustment mm

Designation	
K	
KF	5,7-5,9
MS	1,7-1,9
SVS	max.3,0
K	18,5-20,5
L	9,0-12,5

Observations

C5

BOSCH Geschaftsbereich KH Kundendienst Kfz-Ausrustung

C5

⑥ Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,3 hl
1. Edition

En

VE 4/10 F 2075 R 40-1 Overflow temperature 45° C
0 460 404 004

supersedes -
company: Peugeot
engine: XD25 Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	5,0-5,4	mm	0,67	
1.2 Supply-pump pressure	1400	5,1-5,7	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	500	35,0-36,0	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1000	47,3-49,7	cm³/1000 strokes	0,67	
1.4 Idle regulation	425	8,0-12,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 70,0	cm³/1000 strokes	0	
1.6 Start	2375	20,0-26,0	cm³/1000 strokes	0,67	
1.7 Load-dependent port-closing	1400	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,67 bar	n = rev/min	750	1400	2000
	mm	1,0-1,8(0,7-2,1)	(4,5-5,9)	7,7-8,5(7,4-8,8)
2.2 Supply pump LDA=0,67 bar	n = rev/min	400		2075
	bar (kgf/cm²)	2,4-3,0		6,5-7,1
Overflow delivery	n = rev/min	500		2075
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	6,0-12,0	(5,0-13,0)	0,67
	2375		(19,0-27,0)	0,67
	2000		(42,7-47,3)	0,67
	1750	47,3-48,3	(45,5-50,1)	0,67
	1000	47,3-49,7	(46,2-50,8)	0,67
	+700	41,5-42,5	(39,0-45,0)	0,25
	500		(32,5-38,5)	0
switch-off	2075	0		
Idle stop	460-590	0		0
	425		(6,0-14,0)	0
End stop	430			0
	430			0
2.4 Solenoid	cut-in voltage	min 10 V rated voltage 12 V.		

3. Dimensions

Designation	for assembly and adjustment mm
K	dimension K 1
KF	5,7-5,9
MS	0,9-1,1
SVS	max.5,3
K	20,1-22,1
L	9,5-13,3

Observations

+ LDA-stroke 4,5 mm
Use adjusting nut (46) to correct.

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

C6

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3h2
1. Edition
En

VE 4/9 F 2250 R 59 Overflow temperature 45° C
0 460 494 045

supersedes -
company: Peugeot
engine: XD 2

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	5,3-5,7	mm		
1.2 Supply-pump pressure	1400	5,4-6,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	37,5-38,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	300	21,0-27,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 45,0	cm³/1000 strokes		
1.6 Start	2400	9,0-15,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1400	2000	2250
	mm	1,2-2,0(0,9-2,3)	(4,8-6,2)	7,8-8,4(7,4-8,8)	8,6-9,4(8,3-9,7)
2.2 Supply pump	n = rev/min	400			2250
	bar (kgf/cm²)	2,9-3,5			(7,4-8,0)
Overflow delivery	n = rev/min	500			2250
	cm³/10 s	55-110(40-125)			55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2480-2550	0		
	2450	max. 6,0		
	2400		(8,0-16,0)	
	2350	19,0-27,0	(19,0-27,0)	
	2250	33,2-35,8	(32,2-38,8)	
	2200	33,5-36,1	(32,5-37,1)	
	1400		(35,3-40,3)	
	1000	33,2-35,8	(32,2-36,8)	
	600	30,3-33,3	(28,8-34,8)	
switch-off	2250	0		
Idle stop	380	5,0-9,0	(3,0-11,0)	
	300		(20,0-28,0)	
End stop	450			
	550			
2.4 Solenoid	cut-in voltage	min. 10,0 V		
		rated voltage 12 V.		

3. Dimensions

Designation	for assembly and adjustment mm
K	dimension K 1
KF	5,7-5,9
MS	1,0-1,2
SVS	max.4,0
AX K	20,1-22,2
BX L	8,9-14,5

Observations

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

C7

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Ope 1,6d
1. Edition

En

VE 4/9 F 2300 R 82
0 460 494 071

Overflow temperature 45° C

supersedes
company: Opel
engine: 2033-1,6 l

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,0-3,4	mm		
1.2 Supply-pump pressure	1500	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	30,5-31,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	425	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.42,0	cm³/1000 strokes		
1.6 Start	2575	17,0-23,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1200	1500	2300
	mm	1,3-2,1(1,0-2,4)	(2,5-3,9)	6,6-7,4(6,3-7,7)
2.2 Supply pump	n = rev/min	600		2300
	bar (kgf/cm²)	2,4-3,0		7,6-8,2
Overflow delivery	n = rev/min	500		2300
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2975	max. 4,0		
	2775	(4,0-10,0)	(3,0-11,0)	
	2575		(16,0-24,0)	
	2300	26,8-29,2	(25,7-30,3)	
	2000	27,5-29,5	(26,2-30,8)	
switch-off	2300	0		
Idle stop	max. 1500	0		
	600	2,0-6,0	(0-8,0)	
	425		(4,0-12,0)	
End stop	400	min.30,0		
	500	max.28,0		

2.4 Solenoid	cut-in voltage	min. 10,0 V
		rated voltage 12 V.

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.2,0
+FH	1,8-2,4
X A	24,2-26,2
X B	9,9-13,2

Observations
+ operating stroke (cold-start accel.)

C8

BOSCH

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,7e
1. Edition
En

VE 3/10 F 1800 R 83 Overflow temperature 45° C
0 460 006

supersedes -
company: Fiat
engine: 8130.61. EVA

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,0-4,4	mm		
1.2 Supply-pump pressure	1500	5,2-5,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	42,5-43,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	400	8,0-12,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm³/1000 strokes		
1.6 Start	1900	26,0-34,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1800
	mm	1,7-2,5(1,4-2,8)	(3,5-4,9)	4,9-5,7(4,6-6,0)
2.2 Supply pump	n = rev/min	600		1800
	bar (kgf/cm²)	2,2-2,8		6,2-6,8
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1990-2040	0		
	1950	10,5-16,5	(9,5-17,5)	
	1900		(26,0-34,0)	
	1860-1880	Start		
	1800	39,0-41,0	(37,7-42,3)	
	1500		(40,7-45,3)	
	600	33,0-36,0	(31,5-37,5)	
switch-off	1800	0		
Idle stop	520-620	0		
	400		(6,0-14,0)	
End stop	400			
	500			

2.4 Solenoid — cut-in voltage min. 10 V
rated voltage 12 V.

3. Dimensions

for assembly and adjustment mm

Designation	
K	
KF	5,9-6,1
MS	1,4-1,6
SVS	max.3,3
X K	20,2-22,2
X L	13,6-16,9

Observations

C9

C9

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,3a
1. Edition
En

VE 6/10 F 2250 L 36 (P) Overflow temperature 45° C
0 460 406 005; 006

supersedes -
company VW
engine: 087 LT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000	3,2-3,6	mm		
1.2 Supply-pump pressure	2000	6,3-7,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,0-29,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	10,0-14,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm³/1000 strokes		
1.6 Start	2525	7,0-11,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1500	2000	2250
	mm	1,1-1,9(0,8-2,2)	(2,7-4,1)	3,9-4,7(3,6-5,0)
2.2 Supply pump	n = rev/min	600		2250
	bar (kgf/cm²)	2,6-3,4		7,0-7,8
Overflow delivery	n = rev/min	500		2250
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2525		(5,0-13,0)	
	2250	23,8-25,8	(22,5-27,1)	
	1500		(26,2-30,8)	
	750	27,5-30,5	(26,0-32,0)	
switch-off	2250	0		
Idle stop	400	2,0-8,0	(1,0-9,0)	
	350		(8,0-16,0)	
End stop	400	min. 28,0		
	500	max. 29,0		

2.4 Solenoid — cut-in voltage: min. 10,0 V, rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max.4,5
X XK	20,1-22,1
B X XL	8,9-12,6

Observations

C10

BOSCH Geschaftsbereich KH Kundendienst Kfz-Ausrustung.

⑥

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 3,7c
1. Edition

En

Testoil-ISO 4113

VE 4/10 F 1500 R 57-1 Overflow temperature 45° C

0 460 404 014

supersedes MAN
company: D 0224 ME
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	5,3-5,7	mm		
1.2 Supply-pump pressure	1000	5,5-6,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	61,5-62,5	cm³/1000 strokes		2,5(3,5)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	10,0-14,0	cm³/1000 strokes		2,5(3,5)
1.5 Full-speed regulation	100	min. 60,0	cm³/1000 strokes		
1.6 Start	1650	4,0-10,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1400
	mm	2,6-3,4(2,3-3,7)	(4,8-6,2)	7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min	600		1400
	bar (kgf/cm²)	3,6-4,2		7,0-7,6
Overflow delivery	n = rev/min	500		1500
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1680-1740	0	
	1650	(2,5-11,5)	
	1550	max.60,0	
	1480	68,5-71,5 (67,3-72,7)	
	1000	(59,3-64,7)	
	600	57,25-60,75(55,6-62,4)	
switch-off	1500	0	
Idle stop	400-450	0	
	350	(7,5-16,5)	
End stop	400		
	470		

2.4 Solenoid	cut-in voltage	min.20,0 V
		rated voltage 12 V.

3. Dimensions

for assembly and adjustment mm

Designation	
K	--
KF	5,7-5,9
MS	1,1-1,3
SVS	max.4,0
A K	25,0-27,0
B L	12,2-15,5

Observations
pushing electronagnet
24 V

C11

C11

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Sof 2,5b 1
1. Edition
En

4/9 F 2100 R 22-3 Overflow temperature 45° C
0 460 494 024

supersedes Sofim
company 8140.6.1
engine

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm ± 0,02 (0,04) mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1800	7,4-7,8	mm		
1.2 Supply-pump pressure	1800	6,3-6,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	2000	37,5-38,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	370	8,0-12,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.55,0	cm³/1000 strokes		
1.6 Start	2350	19,0-25,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1800	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	1800	2100
	mm	1,8-2,8(1,6-3,0)	(6,9-8,3)	8,3-9,3(8,1-9,5)
2.2 Supply pump	n = rev/min	400		2100
	bar (kgf/cm²)	2,9-3,5		6,9-7,5
Overflow delivery	n = rev/min	500		2100
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	max. 3,0		
	2350		(18,0-26,0)	
	2100	36,7-39,3	(35,3-40,3)	
	2000		(35,3-40,3)	
	1100	43,5-46,5	(42,7-47,3)	
	600	35,3-38,3	(33,8-39,8)	
switch-off	2100	0		
Idle stop	500	max.3,0		
	370		(6,0-14,0)	
2.4 Solenoid	cut-in voltage	min. 10V rated voltage 12 V.		

3. Dimensions

for assembly and adjustment mm

Designation	
K	
KF	5,4-5,6
MS	1,7-1,9
SVS	max.2,7
+ FH	1,8-2,4
A	
B	

Observations

+ operating stroke (cold-start accel.)

C12

C12

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 RVI
1. Edition

En

VE 4/12 F 1500 R 51
0 460 424 001

Overflow temperature 45° C

supersedes -
company: RVI-Saviem
engine: 720 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	3,1-3,5	mm	0,67	
1.2 Supply-pump pressure	1000	5,3-5,9	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	900	63,5-66,5	cm³/1000 strokes	0	2,5(4,5)
Full-load delivery without charge-air pressure	900	83,0-84,0	cm³/1000 strokes	0,67	
1.4 Idle regulation	300	20,0-26,0	cm³/1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min.100,0	cm³/1000 strokes	0	
1.6 Start	1675	9,5-15,5	cm³/1000 strokes	0,67	
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1000	1400
	mm	1,2-2,0(0,9-2,3)	(2,6-4,0)	4,9-5,7(4,6-6,0)
2.2 Supply pump	n = rev/min	300		1500
	bar (kgf/cm²)	2,7-3,0		6,9-7,5
Overflow delivery	n = rev/min	500		1500
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1700-1780	0		0,67
	1675		(7,5-17,5)	0,67
	1650	27,0-33,0	(25,0-35,0)	0,67
	1500	84,0-87,0	(82,5-88,5)	0,67
	900		(62,0-68,0)	0
	900		(80,5-86,5)	0,67
	+500	65,0-69,0	(64,0-70,0)	0,27
	500	56,0-60,0	(54,2-61,8)	0
switch-off	1500	0		
Idle stop	380-480	0		
	300		(18,0-28,0)	
End stop	180			
	240			

2.4 Solenoid	cut-in voltage xxx min. 10,0V rated voltage 12 V.

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max.6,0
☒ XK	20,1-22,1
☒ XL	12,6-16,4

Observations
24 V-Electromagnet

LDA-stroke 4,5 mm
+ Use adjusting nut (46) to correct.

C13

C13

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,7A1
1. Edition
En

VE 4/9 F 2300 R 43
0 460 494 034

Overflow temperature 45° C

supersedes
company: Fiat
engine: X 8/28

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

Testoil-ISO 4113

1. Setting3

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delive... cm³
1.1 Timing device travel	1500	4,3-4,7	mm		
1.2 Supply-pump pressure	1500	5,1-5,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	34,2-35,2	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	8,0-12,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 48,0	cm³/1000 strokes		
1.6 Start	2400	14,5-20,5	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1500	2300
	mm	1,8-2,6(1,5-2,9)	(3,8-5,2)	7,0-7,8(6,7-8,1)
2.2 Supply pump	n = rev/min	400		2300
	bar (kgf/cm²)	2,5-3,1		6,9-7,5
Overflow delivery	n = rev/min	500		2300
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	2,0-8,0		
	2400		(13,5-21,5)	
	2250	28,0-30,0	(26,7-31,3)	
	1500		(32,4-37,0)	
	600	23,5-26,5	(22,0-28,0)	
switch-off	2300	0		
Idle stop	400-540	0		
	400	max. 4,0		
	350		(6,0-14,0)	
End stop	400			
	480			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12 V.

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	max.3,5
XK	20,1-22,1
XL	9,5-13,3

Observations

C14

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,3b1
1. Edition
En

VE 6/10 F 2400 L 32
0 460 406 003

Overflow temperature 45° C

supersedes
company: VW
engine: 087/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,0-3,4	mm		
1.2 Supply-pump pressure	1500	5,1-5,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	27,0-28,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	10,0-14,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.45,0	cm³/1000 strokes		
1.6 Start	2600	15,5-21,5	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2000	2400
	mm	0,8-1,6(0,5-1,9)	(2,5-3,9)4,5-5,3(4,2-5,6)	5,4-6,2(5,1-6,5)	
2.2 Supply pump	n = rev/min	600			2400
	bar (kgf/cm²)	2,7-3,5			6,6-7,4
Overflow delivery	n = rev/min	500			2400
	cm³/10 s	55-110(40-125)			55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	7,0-11,0		
	2600		(14,5-22,5)	
	2400	23,5-25,5	(22,2-26,8)	
	1500		(25,2-29,8)	
	750	26,5-29,5	(25,0-21,0)	
switch-off	2400	0		
Idle stop	400	3,0-9,0		
	350		(8,0-16,0)	
End stop	400	min. 30,0		
	500	max. 30,0		

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max.3,0
AX XK	18,5-20,5
BX XL	9,2-12,9

Observations

Testoil-ISO 4113

C15

CAS

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,0c
1. Edition
En

VE 5/10 F 2400 L 35-6 (P Overflow temperature 45° C
0 460 405 027; 028

supersedes -
company: VWW
engine: Audi 100

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02 (0,04)

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	2,6-3,0	mm		
1.2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	33,5-34,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.56,0	cm³/1000 strokes		
1.6 Start	2500	22,0-26,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2400
	mm	1,4-2,4(1,2-2,6)	(2,1-3,5)	5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min	500		2400
	bar (kgf/cm²)	2,8-3,4		7,5-8,1
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650	7,0-11,0	(5,0-13,0)	
	2500		(20,0-28,0)	
	2400	28,0-31,0	(27,2-31,8)	
	1400		(31,7-36,3)	
	750	24,5-27,5	(23,0-29,0)	
switch-off	2400	0		
Idle stop	500	max.3,0		
	375		(4,0-12,0)	
End stop	400	min. 23,0		
	500	max. 23,0		

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max.3,0
A XK	18,5-20,5
B XL	9,0-12,5

Observations

Mechanical Stop control

BOSCH Geschaftsbereich KH Kundendienst Kfz-Ausrustung

C16

⑥

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2,0c
1. Edition
En

VE 4/9 F 1500 R 68
0 460 494 054

Overflow temperature 45° C

supersedes -
company: Renault
engine. 4130 RMC

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	1,7-2,1	mm		
1.2 Supply-pump pressure	1500	6,1-6,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	34,7-35,7	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	8,0-12,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm³/1000 strokes		
1.6 Start	1600	15,0-21,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1200	1500
	mm	0,8-1,6(0,5-1,9)	(1,2-2,6)
2.2 Supply pump	n = rev/min	600	1200
	bar (kgf/cm²)	3,9-4,5	5,4-6,0
Overflow delivery	n = rev/min	500	1500
	cm³/10 s	55-110(40-125)	55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1700-1770	0		
	1600		(14,0-22,0)	
	1500		(32,9-37,5)	
	1000	28,7-31,7	(27,9-32,5)	
	600	23,2-27,2	(22,2-28,2)	
switch-off	1500	0		
Idle stop	400-460	0		
	350		(6,0-14,0)	
End stop	360			
	460			

2.4 Solenoid — cut-in voltage: min. 10,0 V, rated voltage 12V

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.3,3
A XK	19,5-21,5
B XL	8,3-11,6

Observations

C17

C17

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6i
1. Edition
En

VE 4/9F 2250 R 78-1 (P) Overflow temperature 45° C
0 460 404 098; 099

supersedes -
company: VWW
engine: 086T-1,6-Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,0-4,4	mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	23,5-24,5	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75	
1.4 Idle regulation	475	7,0-11,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes	0	
1.6 Start	2525	9,0-15,0	cm³/1000 strokes	0,75	
1.7 Load-dependent port-closing	--				

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2250
	mm	1,9-2,7(1,6-3,0)	(3,5-4,9)	6,2-7,0(5,9-7,3)
2.2 Supply pump	n = rev/min	1600		2250
	bar (kgf/cm²)	3,3-3,9		7,4-8,0
Overflow delivery	n = rev/min	500		2250
	cm³/10 s	55.110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2730-2870	0		0,75
	2525		(8,0-16,0)	0,75
	2250	38,5-40,5	(37,2-41,8)	0,75
	1500		(41,7-46,3)	0,75
	+1000	33,5-34,5	(31,7-36,3)	0,3
	600		(21,0-27,0)	0
switch-off	2250	0		
Idle stop	1200	max. 10,0		0
	475		(5,0-13,0)	
End stop	440			
	520			

2.4 Solenoid — cut-in voltage: min. 10,0 V; rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.4,4
AX	18,4-20,4
BX	10,4-12,7

Observations

LDA-stroke 4,0 mm
+ Use adjusting nut (46) to correct.

C18

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 f
1. Edition
En

VE 4/10 F 2125 R 67-1
0 460 404 020

Overflow temperature 45° C

supersedes -
company: Peugeot
engine: XD 25 - US 81

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,0-5,4	mm	0,8	
1.2 Supply-pump pressure	1500	5,4-6,0	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	600	36,0-39,0	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1125	48,7-49,7	cm³/1000 strokes	0,8	
1.4 Idle regulation	390	8,0-12,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.53,0	cm³/1000 strokes	0	
1.6 Start	2450	9,5-15,5	cm³/1000 strokes	0,8	
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1500	2000
	mm	1,3-2,1(1,0-2,4)	2,9-3,5(2,5-3,9)	(4,5-5,9)	6,9-7,7(6,6-8,0)
2.2 Supply pump	n = rev/min	400			2075
	bar (kgf/cm²)	1,6-2,2			7,6-8,2
Overflow delivery	n = rev/min	500			2125
	cm³/10 s	55-110(40-125)			55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	max.9,0		0,8
	2450		(7,5-16,5)	0,8
	2350	23,0-31,0	(23,0-31,0)	0,8
	2050	44,3-46,7	(43,2-47,8)	0,8
	1400	50,6-53,0	(49,5-54,1)	0,8
	1125		(46,9-51,5)	0,8
	+750	42,3-43,3	(39,8-45,8)	0,25
	600		(34,5-40,5)	0
switch-off	2125	0		
Idle stop	450-550	0		
	390		(6,0-14,0)	
End stop	400			
	500			

2.4 Solenoid — cut-in voltage: min. 10,0 V, rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
SVS	max.1,2
X XK	20,0-22,2
B XL	8,8-12,2

Observations

LDA-stroke 4,5 mm
+ Use adjusting nut (46) to correct.

C19

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6v2
1. Edition
En

VE 4/9 F 1500 R 85-3
0 460 494 108

Overflow temperature 45° C

supersedes -
company: VWW
engine: 50 Hz units

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1480	3,1-3,5	mm		
1.2 Supply-pump pressure	1480	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1480	32,5-33,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	425	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes		
1.6 Start	1550	12,0-18,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1480
	mm	1,4-2,2(1,1-2,5)	(2,6-4,0)
2.2 Supply pump	n = rev/min	400	
	bar (kgf/cm²)	2,3-2,9	
Overflow delivery	n = rev/min	500	1500
	cm³/10 s	55-110(40-125)	55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1600-1650	0	
	1550	(11,0-19,0)	
	1480	(30,7-35,3)	
	600	21,0-24,0 (19,5-25,5)	
switch-off	1500	0	
Idle stop	560-700	0	
	425	(4,0-12,0)	
End stop	400		
	500		

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.2,5
+FH	1,8-2,4
XX XK	18,4-20,4
B XX XL	10,2-13,5

Observations

+ operating stroke (cold-start accel.)

C20

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 4,6a
1. Edition
En

VE 5/11 F 1250 R 58 Overflow temperature 45° C
0 460 415 001

supersedes –
company: Fiat
engine: 8055.04.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	900	4,8-5,2	mm		
1.2 Supply-pump pressure	900	4,5-5,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	900	65,0-66,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	11,5-15,5	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 70,0	cm³/1000 strokes		
1.6 Start	1330	23,0-29,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	900	1100
	mm	1,1-1,9(0,8-2,2)	(4,3-5,7)	6,4-7,2(6,1-6,5)
2.2 Supply pump	n = rev/min	400		1250
	bar (kgf/cm²)	2,7-3,3		5,7-6,3
Overflow delivery	n = rev/min	500		1250
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1370-1420	0		
	1330		(21,5-30,5)	
	1300	35,0-41,0	(33,5-42,5)	
	1230	62,0-65,0	(60,8-66,2)	
	900		(62,8-68,2)	
	500	53,75-57,25	(52,1-58,9)	
switch-off	1250	0		
Idle stop	430-500	0		
	350	11,5-15,5		
End stop	150			
	250			

2.4 Solenoid — cut-in voltage: min. 10,0 V, rated voltage 12V

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,4-5,6
MS	1,5-1,7
SVS	max.6,0
+FH	1,8-2,4
¥A XK	25,0-27,0
¥B XL	10,8-14,1

Observations

+ operating stroke (cold-start accel.)

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3h
1. Edition
En

VE 4/10 F 2075 R 40
0 460 404 003

Overflow temperature 45° C

supersedes company: Peugeot
engine: XD 2 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	5,0-5,4	mm	0,67	
1.2 Supply-pump pressure	1400	5,1-5,7	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	500	35,0-36,0	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1000	47,3-49,7	cm³/1000 strokes	0,67	
1.4 Idle regulation	375	8,0-12,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.70,0	cm³/1000 strokes	0	
1.6 Start	2375	20,0-26,0	cm³/1000 strokes	0,67	
1.7 Load-dependent port-closing	1400	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,67bar	n = rev/min	750	1400	2000
	mm	1,0-1,8(0,7-2,1)	(4,5-5,9)	7,7-8,5(7,4-8,8)
2.2 Supply pump LDA=,67bar	n = rev/min	400		2075
	bar (kgf/cm²)	2,4-3,0		6,5-7,1
Overflow delivery	n = rev/min	500		2075
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	6,0-12,0	(5,0-13,0)	0,67
	2375		(19,0-27,0)	0,67
	2000	43,8-46,2	(42,7-47,3)	0,67
	1750	47,3-48,3	(45,5-50,1)	0,67
	1000		(46,2-50,8)	0,67
	+750	41,5-42,5	(39,0-45,0)	0,25
	500	35,0-36,0	(32,5-38,5)	0
switch-off	2075	0		
Idle stop	400-470	0		0
	375		(6,0-14,0)	0
End stop	430			
	480			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	Maß K 1
KF	5,7-5,9
MS	0,9-1,1
SVS	max.5,3
X XK	20,1-22,1
X XL	10,5-14,3

Observations

LDA-stroke 4,5 mm
+ Use adjusting nut (46) to correct.

C22

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VMA 2,2a
1. Edition

En

VE 4/10 F 2100 L 75 Overflow temperature 45° C
0 460 404 024

supersedes -
company: VM-Motori
engine: HR 492 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1900	8,2-8,6	mm	0,7	
1.2 Supply-pump pressure	1900	6,8-7,4	bar (kgf/cm²)	0,7	
1.3 Full-load delivery with charge-air pressure	600	32,0-35,0	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1600	49,0-50,0	cm³/1000 strokes	0,7	
1.4 Idle regulation	400	15,0-19,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min. 65,0	cm³/1000 strokes	-	
1.6 Start	2100	43,0-46,0	cm³/1000 strokes	0,7	
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,7bar	n = rev/min	1000	1900	2100
	mm	2,0-2,8(1,7-3,1)	(7,7-9,1)	9,4-10,0(9,0-10,4)
2.2 Supply pump LDA=0,7 bar	n = rev/min	400		2100
	bar (kgf/cm²)	1,5-2,1		7,5-8,1
Overflow delivery	n = rev/min	500		2100
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2450	max. 5,0		0,7
	2300	24,5-30,5	(23,5-31,5)	0,7
	2100		(42,2-46,8)	0,7
	1600	31,0-34,0	(30,3-34,8)	0
	1600		(47,2-51,8)	0,7
	+700	41,0-44,0	(39,5-45,5	0,3
	600		(30,5-36,5)	0
switch-off	2100	0		
Idle stop	550-750	0		
	400		(13,0-21,0)	
End stop	400			
	500			

2.4 Solenoid	cut-in voltage	min. 10,0V
		rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	4,4-4,6
+FH	1,8-2,4
X	20,2-22,2
B	10,0-13,3

Observations

LDA-stroke 4,5 mm
+ Use adjusting nut (46) to correct.

C23

623

BOSCH

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA 2,0a
1. Edition
En

VE 4,) F 2150 L 31
0 460 494 016

Overflow temperature 45° C

supersedes -
company: VM-Motori
engine: HR 488 HT

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1900	6,5-6,9	mm	0,7	
1.2 Supply-pump pressure	1900	5,7-6,3	bar (kgf/cm²)	0,7	
1.3 Full-load delivery with charge-air pressure	600	30,5-33,5	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1600	46,5-47,5	cm³/1000 strokes	0,7	
1.4 Idle regulation	400	8,0-12,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.55,0	cm³/1000 strokes	0	
1.6 Start	2300	27,5-33,5	cm³/1000 strokes	0,7	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1900	2150
	mm	1,5-2,3(1,2-2,6)	(6,0-7,4)	7,5-8,3(7,2-8,6)
2.2 Supply pump	n = rev/min	400		2150
	bar (kgf/cm²)	2,0-2,6		6,3-6,9
Overflow delivery	n = rev/min	500		2150
	cm³/10 s	55-110(40-125)		55.110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500-2650	0		0,7
	2450	max.10,0		0,7
	2300		(26,5-34,5)	0,7
	2150	40,0-43,0	(39,2-43,8)	0,7
	1600	34,5-35,5	(32,7-37,3)	0
	1600		(44,7-49,3)	0,7
	+600	38,3-41,3	(36,8-42,8)	0,27
	600		(29,0-35,0)	0
switch-off	2150	0		
Idle stop	800	0		0
	500	max. 6,0		0
	400		(6,0-14,0)	0
End stop	400			
	500			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max.6,0
A	
B	

Observations

LDA-stroke 3,8 mm
+ Use adjusting nut (46) to correct.

C24

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6 v 1
1. Edition
En

VE 4/9 2000 R 85
0 460 494 086

Overflow temperature 45° C

supersedes -
company: VWW
engine: Industrie-Motor 065.5

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	32,5-33,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	425	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0	cm³/1000 strokes		
1.6 Start	2050	9,0-15,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1800	2000
	mm	1,4-2,2(1,1-2,5)	(2,6-4,0)	4,2-4,8(3,8-5,2)	4,7-5,5(4,4-5,8)
2.2 Supply pump	n = rev/min	400	1500		2000
	bar (kgf/cm²)	2,1-2,7	4,9-5,5		6,1-6,7
Overflow delivery	n = rev/min	500			2000
	cm³/10 s	55-110(40-125)			55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2070	max. 2,0		
	2050		(8,0-16,0)	
	2010-2020	Start		
	2000	29,0-31,0	(27,7-32,3)	
	1980	29,0-31,0	(27,7-32,3)	
	1500		(30,7-35,3)	
	600	21,0-24,0	(19,5-25,5)	
switch-off	2000	0		
Idle stop	700	0		
	600	max. 2,0		
	425		(4,0-12,C)	
End stop	400			
	500			
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V		

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.2,5
+FH	1,8-2,4
Ax XK	18,4-20,4
Bx XL	13,6-17,0

Observations

+operating stroke (cold-start accel.)

D1

BOSCH Geschaftsbereich KH Kundendienst Kfz-Ausrüstung

DA

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3 d
1. Edition
En

VE 4/9 F 2250 R 50
0 460 494 041

Overflow temperature 45° C

supersedes -
company: Peugeot
engine: XD2 USA

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1600	3,4-3,8	mm		
1.2 Supply-pump pressure	1600	5,4-6,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	39,0-40,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	400	10,0-14,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.50,0	cm³/1000 strokes		
1.6 Start	2350	23,0-29,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	900	1200	1600	2000	2200
	mm	0,3-1,1 (0-1,4)	1,8-2,4 (1,4-2,8)	2,9-4,3	5,0-5,8 (4,7-6,1)	6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min	400				2250
	bar (kgf/cm²)	1,1-1,7				7,9-8,5
Overflow delivery	n = rev/min	500				2250
	cm³/10 s	55-110(40-125)				55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	max. 5,0		
	2450	6,5-12,5	(5,5-13,5)	
	2350		(22,0-30,0)	
	2200	34,8-37,2	(33,7-38,3)	
	2000	36,5-38,5	(35,2-39,8)	
	1400		(37,2-41,8)	
	900	32,5-35,5	(31,7-36,3)	
	600	31,5-34,5	(30,0-36,0)	
switch-off	2250	0		
Idle stop	440-600	0		
	400		(8,0-16,0)	
End stop	465			
	515			
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V		

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max.3,2
A XK	20,2-22,2
B X XL	15,8-19,8

Observations

D2

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

D2

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6V
1. Edition
En

VE 4/9 F 2000 R 86
0 460 494 088

Overflow temperature 45° C

supersedes
company: VWW
engine: 086-1.6 Bell

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	33,5-34,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	5,0-9,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes		
1.6 Start	2100	22,0-26,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2000
	mm	1,4-2,2(1,1-2,5)	(2,6-4,0)	4,7-5,5(4,4-5,8)
2.2 Supply pump	n = rev/min	400		2000
	bar (kgf/cm²)	2,3-2,7		6,0-6,6
Overflow delivery	n = rev/min	500		2000
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2200	1,0-7,0	(0,0-8,0)	
	2100		(20,0-28,0)	
	2000	26,7-29,3	(25,7-30,3)	
	1500		(31,7-36,3)	
	600	22,5-25,5	(21,0-27,0)	
switch-off	2000	0		
Idle stop	400-480	0		
	350		(3,0-11,0)	
End stop	400	min. 24,0		
	500	max. 26,0		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V		

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.2,5
+FH	1,8-2,4
A X XK	
B X XL	

Observations

+ operating stroke (cold-start accel.)

D3

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 3,7c 1
1. Edition

En

Testoil-ISO 4113

VE 4/10 F 1500 R 57 Overflow temperature 45° C
0 460 404 010

supersedes company: MAN
engine: D 0224 MF

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	5,3-5,7	mm		
1.2 Supply-pump pressure	1000	5,5-6,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	61,5-62,5	cm³/1000 strokes		2,5(3,5)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	10,0-14,0	cm³/1000 strokes		2,5(3,5)
1.5 Full-speed regulation	100	min. 60,0	cm³/1000 strokes		
1 6 Start	1650	4,0-10,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1400
	mm	2,6-3,4(2,3-3,7)	(4,8-6,2)	7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min	600		1400
	bar (kgf/cm²)	3,6-4,2		7,0-7,6
Overflow delivery	n = rev/min	500		1500
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1680-1740	0	
	1650	(2,5-11,5)	
	1550	max.60,0	
	1480	68,5-71,5 (67,3-72,7)	
	1000	(59,3-64,7)	
	600	57,25-60,75(55,6-62,4)	
switch-off	1500	0	
Idle stop	400-450	0	
	350	(7,5-16,5)	
End stop	400		
	470		
2.4 Solenoid	cut-in voltage	min.20,0 V rated voltage 12V	

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,7-5,9
MS	1,1-1,3
SVS	max.4,0
KK	25,0-27,0
KL	12,2-15,5

Observations

D4

34

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6v4
1. Edition
En

VE 4/9 F 1800 R 85-1
0 460 494 107

Overflow temperature 45° C

supersedes
company: VWW
engine: 638/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	32,5-33,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	425	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 35,0	cm³/1000 strokes		
1.6 Start	1870	9,0-15,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1780
	mm	1,4-2,2(1,1-2,5)	(2,6-4,0)	3,8-4,6(3,5-4,9)
2.2 Supply pump	n = rev/min	400		1780
	bar (kgf/cm²)	2,3-2,9		5,5-6,1
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1920-1970	0	
	1870	(8,0-16,0)	
	1780	29,9-31,9(28,6-33,2)	
	1500	(30,7-35,3)	
	600	21,0-24,0(19,5-25,5)	
switch-off	1800	0	
Idle stop	560-700	0	
	425	(4,0-12,0)	
End stop	400		
	500		

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.2,5
+FH	1,8-2,4
AX XK	18,4-20,4
BX XL	9,7-13,1

Observations

+ operating stroke (cold-start accel.)

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 REN 2,0b
1. Edition
En

VE 4/9 F 2250 R 41
0 460 494 027

Overflow temperature 45° C

supersedes company: Renault
engine: 852

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	4,6-5,0	mm		
1.2 Supply-pump pressure	1400	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	40,0-41,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation	350	6,0-10,0	cm³/1000 strokes		
1.5 Full-speed regulation	100	min.52,0	cm³/1000 strokes		
1.6 Start	2400	17,0-23,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2000
	mm	2,8-3,6(2,5-3,9)	(4,1-5,5)	6,8-7,6(6,5-7,9)
2.2 Supply pump	n = rev/min	1000		2000
	bar (kgf/cm²)	3,9-4,5		6,5-7,1
Overflow delivery	n = rev/min	500		2250
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2630-2700	0		
	2400		(16,0-24,0)	
	2200	32,9-34,9	(31,6-36,2)	
	2100	33,5-35,5	(32,2-36,8)	
	1400		(38,2-42,8)	
	1000	35,6-37,6	(34,8-38,4)	
switch-off	2250	0		
Idle stop	400-460	0		
	350		(4,0-12,0)	
End stop	420			
	480			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max.3,5
AK XK	20,1-22,1
BX XL	9,5-13,3

Observations

D6

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PEU 2,3e
1. Edition
En

VE 4/10 F 2075 R 67 Overflow temperature 45° C
0 460 404 012

supersedes
company: Peugeot
engine: XD 2 S - US

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	5,0-5,4	mm	0,8	
1.2 Supply-pump pressure	1500	5,4-6,0	bar (kgf/cm²)	0,8	
1.3 Full-load delivery with charge-air pressure	600	36,0-39,0	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1125	48,7-49,7	cm³/1000 strokes	0,8	
1.4 Idle regulation	390	8,0-12,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.53,0	cm³/1000 strokes	0	
1.6 Start	2400	9,5-15,5	cm³/1000 strokes	0,8	
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1500	2000
	mm	1,3-2,1(1,0-2,4)	2,9-3,5(2,5-3,9)	(4,5-5,9)	6,9-7,7(6,6-8,0)
2.2 Supply pump	n = rev/min	400			2075
	bar (kgf/cm²)	1,6-2,2			
Overflow delivery	n = rev/min	500			2075
	cm³/10 s	55-110(40-125)			55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2450	max.9,0		0,8
	2400		(7,5-16,5)	0,8
	2300	24,5-32,5	(24,5-32,5)	0,8
	2000	44,3-46,7	(43,2-47,8)	0,8
	1400	50,6-53,0	(49,5-54,1)	0,8
	1125		(46,9-51,5)	0,8
	+750	42,3-43,3	(39,8-45,8)	0,25
	600	36,0-39,0	(34,5-40,5)	0
switch-off	2075	0		
Idle stop	450-550	0		
	390		(6,0-14,0)	
End stop	400			
	500			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
SVS	max.1,4
AX XK	20,2-22,2
BX XL	8,8-12,2

Observations

LDA-stroke 4,5 mm
+ Use adjusting nut (46) to correct.

D7

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 BUK 1,5b
1. Edition
En

VE 3/10 F 1800 L 33-1 Overflow temperature 45° C
0 460 403 002

supersedes -
company: Bukh
engine: DU 36 ME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1600	4,3-4,7	mm		
1.2 Supply-pump pressure	1600	6,4-7,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1600	37,5-38,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	500	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.38,0	cm³/1000 strokes		
1.6 Start	1850	17,0-23,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1600	1800
	mm	1,0-1,8(0,7-2,1)	(3,8-5,2)	5,2-6,0(4,9-6,3)
2.2 Supply pump	n = rev/min	400		1800
	bar (kgf/cm²)	1,7-2,3		7,2-7,8
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1930-2000	0		
	1900	1,0-9,0		
	1850		(16,0-24,0)	
	1750	34,7-37,3	(33,7-38,3)	
	1600		(35,7-40,3)	
	1000	39,0-42,0	(38,2-42,8)	
	600	31,5-35,5	(30,5-36,5)	
switch-off	1800	0		
Idle stop	530-600	0		
	500		(4,0-12,0)	
End stop	470			
	570			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,9-6,1
MS	0,9-1,1
SVS	max.4,2
X XK	20,2-22,2
X XL	12,2-15,5

Observations
pushing electronagnet

D8

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6b
1. Edition
En

VE 4/9 F 2400 R 66-Z
0 460 494 050

Overflow temperature 45° C

supersedes –
company: VWW
engine: Rabbit

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,0-2,4	mm		
1.2 Supply-pump pressure	1500	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	30,0-31,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	6,5-10,5	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes		
1.6 Start	2600	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1500	2000	2400
	mm	(1,5-2,9)	4,3-4,9(3,9-5,3)	6,0-7,0(5,8-7,2)
2.2 Supply pump	n = rev/min	400		2400
	bar (kgf/cm²)	1,1-1,7		7,5-8,1
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	2,0-10,0	(2,0-10,0)	
	2600		(10,0-18,0)	
	2400	25,9-28,5	(24,9-29,5)	
	1500		(28,2-32,8)	
	600	17,5-20,5	(16,0-22,0)	
switch-off	2400	0		
Idle stop	1200	max.3,0		
	600	max.6,0		
	415		(4,5-12,5)	
End stop	400			
	500			

2.4 Solenoid — cut-in voltage

3. Dimensions

for assembly and adjustment mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.4,0
	1,8-2,4
Ax XK	18,4-20,4
Bx XK	9,1-12,9

Observations

+operating stroke (cold-start accel.)

D9

Dg

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6L
1. Edition
En

VE 4/9 F 2400 R 66-12 (P)
0 460 494 082; 0,83

supersedes -
company: VWW
engine: Rabbit Autom.

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	30,0-31,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	6,5-10,5	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes		
1.6 Start	2600	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	155	2400
	mm	1,4-2,2(1,1-2,5)	(2,6-4,0)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	400		2400
	bar (kgf/cm²)	2,1-2,7		7,0-7,6
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	2,0-10,0	(2,0-10,0)	
	2600		(10,0-18,0)	
	2400	25,9-28,5	(24,9-29,5)	
	1500		(28,5-32,8)	
	600	17,5-20,5	(16,0-22,0)	
switch-off	2400	0		
Idle stop	1200	max. 5,0		
	600	max. 6,0		
	415		(4,5-12,5)	
End stop	400	min. 30,0		
	500	max. 30,0		

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	4,4
AX XK	18,4-20,4
BX XL	10,4-12,7

Observations

LDA-stroke 4,0 mm
+ Use adjusting nut (46) to correct.

D10

D10

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6d
1. Edition
En

VE 4/9 F 2400 R 66-8
0 460 494 077

supersedes
company: VWW
engine: 1,6l Rabbit

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	30,0-31,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	6,5-10,5	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes		
1.6 Start	2600	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	1,4-2,2(1,1-2,5)	(2,6-4,0)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	400		2400
	bar (kgf/cm²)	2,1-2,7		7,0-7,6
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	2,0-10,0	(2,0-10,0)	
	2600		(10,0-18,0)	
	2400	25,9-28,5	(24,9-29,5)	
	1500		(28,2-32,8)	
	600	17,5-20,5	(16,0-22,0)	
switch-off	2400	0		
Idle stop	1200	max. 3,0		
	600	max. 6,0		
	415		(4,5-12,5)	
End stop	400			
	500			

2.4 Solenoid — cut-in voltage min. 10,0 V, rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.3,2
+FH	1,8-2,4
X	18,4-20,4
X	10,5-13,8

Observations
+ operating stroke (cold-start accel.)

D11

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6a
1. Edition
En

VE 4/9 F 2400 R 66-3
R 66-7

supersedes –
company: VW
engine:

0 460 494 052
0 460 494 075

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,1-3,5 mm		
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	33,0-34,0 cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	-- cm³/1000 strokes		
1.4 Idle regulation	475	5,0-11,0 cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0 cm³/1000 strokes		
1.6 Start	2600	11,0-17,0 cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	1,4-2,2(1,1-2,5)	(2,6-4,0)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	400		2400
	bar (kgf/cm²)	2,1-2,7		7,0-7,6
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	2,0-10,0	(2,0-10,0)	
	2600		(10,0-18,0)	
	2400	27,7-30,3	(26,7-31,3)	
	1500		(31,2-35,8)	
	600	21,5-24,5	(20,0-26,0)	
switch-off	2400	0		
Idle stop	1200	max. 3,0		
	650	max. 5,0		
	475	5,0-11,0	(4,0-12,0)	
End stop	400	min.20,0		
	500	max.21,0		

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.2,5
+FH	1,8-2,4
A XK	18,4-20,4
B XL	9,1-12,9

Observations

+ operating stroke (cold-start accel.)

D12

D12

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6k
1. Edition
En

VE 4/9 F 2250 R 79
R 79 P

supersedes –
company: VWW
engine: 086-T-1,6

0 460 494 064
0 460 494 065

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,0-4,4	mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	23,5-24,5	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75	
1.4 Idle regulation	475	7,0-11,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes	0	
1.6 Start	2525	9,0-15,0	cm³/1000 strokes	0,75	
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2250
	mm	1,9-2,7(1,6-3,0)	(3,5-4,9)	6,2-7,0(5,9-7,3)
2.2 Supply pump	n = rev/min	600		2250
	bar (kgf/cm²)	3,3-3,9		7,4-8,0
Overflow delivery	n = rev/min	500		2250
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2730-2870	0		0,75
	2525		(8,0-16,0)	0,75
	2250	38,5-40,5	(37,2-41,8)	0,75
	1500		(41,7-46,3)	0,75
	+1000	33,5-34,5	(31,7-36,3)	0,3
	600		(21,0-27,0)	0
switch-off	2250	0		
Idle stop	1200	max. 5,0		
	475		(5,0-13,0)	
End stop	440			
	520			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	4,4
A x XK	18,4-20,4
B x XL	10,0-13,6

Observations

LDA-stroke 4,0 mm
+ Use adjusting nut (46) to correct.

D13

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

D13

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6h
1. Edition
En

VE 4/9 F 2250 R 78
0 460 494 062/063

supersedes –
company: VWW
engine: 086T-1,6

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,0-4,4	mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	23,5-24,5	cm³/1000 strokes	0	
Full-load delivery without charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75	2,5(3,0)
1.4 Idle regulation	475	7,0-11,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes	0	
1.6 Start	2525	9,0-15,0	cm³/1000 strokes	0,75	
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75bar	n = rev/min	1000	1500	2250
	mm	1,9-2,7(1,6-3,0)	(3,5-4,9)	6,2-7,0(5,9-7,3)
2.2 Supply pump LDA=0,75bar	n = rev/min	600		2250
	bar (kgf/cm²)	3,3-3,9		7,4-8,0
Overflow delivery	n = rev/min	500		2250
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2730-2870	0		0,75
	2525		(8,0-16,0)	0,75
	2250	38,5-40,5	(37,2-41,8)	0,75
	1500		(41,7-46,3)	0,75
	+1000	33,5-34,5	(31,7-36,3)	0,3
	600		(21,0-27,0)	0
switch-off	2250	0		
Idle stop	1200	max. 5,0		
	475		(5,0-13,0)	
End stop	440			
	520			

2.4 Solenoid	cut-in voltage	min 10 V
		rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	4,4
XK	18,4-20,4
XL	10,0-13,6

Observations

LDA-stroke 4,0 mm
+ Use adjusting nut (46) to correct.

D14

D14

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6L
1. Edition
En

VE 4/9 F 2250 R 79-1
R 79-1 P

supersedes -
company: VWW
engine: 086 T-1,6-Autom.

0 460 494 100
0 460 494 101 Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,0-4,4	mm	0,75	
1.2 Supply-pump pressure	1500	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge air pressure	600	23,5-24,5	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1500	43,5-44,5	cm³/1000 strokes	0,75	
1.4 Idle regulation	475	7,0-11,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes	0	
1.6 Start	2525	9,0-15,0	cm³/1000 strokes	0,75	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device LDA=0,75bar	n = rev/min	1000	1500	2250
	mm	1,9-2,7(1,6-3,0)	(3,5-4,9)	6,2-7,0(5,9-7,3)
2.2 Supply pump LDA=0,75bar	n = rev/min	1600		2250
	bar (kgf/cm²)	3,3-3,9		7,4-8,0
Overflow delivery	n = rev/min	500		2250
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	2730-2870	0		0,75
	2525		(8,0-16,0)	0,75
	2250	38,5-40,5	(37,2-41,8)	0,75
	1500		(4,7 -46,3)	0,75
	+1000	33,5-34,5	(31,7-36,3)	0,3
	600		(21,0-27,0)	0
switch-off	2250	0		
Idle stop	1200	max.10,0		0
	475		(5,0-13,0)	
End stop	440			
	520			

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.4,4
A XK	18,4-20,4
B XL	10,4-12,7

Observations

+ LDA-stroke 4,0 mm
Use adjusting nut (46) to correct.

D15

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 2,0b
1. Edition

En

VE 5/10 F 2400 L 45-1 (P)
0 460 405 007; 008

supersedes
company: VW/Volvo
engine: 069.3

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02 (0,04)

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	2,6-3,0	mm		
1.2 Supply-pump pressure	1400	4,9-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	33,5-34,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.56,0	cm³/1000 strokes		
1.6 Start	2500	22,0-26,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2400
	mm	1,4-2,4(1,2-2,6)	(2,1-3,5)	5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min	500		2400
	bar (kgf/cm²)	2,8-3,4		7,4-8,1
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650	max. 13,0		
	2500		(20,0-28,0)	
	2400	28,0-31,0	(27,2-41,8)	
	1400	33,5-34,5	(31,7-36,3)	
	750	24,5-27,5	(23,0-29,0)	
switch-off	2400	0		
Idle stop	500	max. 3,0		
	375		(4,0-12,0)	
End stop	400			
	500			

2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12 V

3. Dimensions

for assembly and adjustment mm

Designation	
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max.3,0
A XK	18,5-20,5
B XL	9,0-12,5

Observations

D16

D16

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,0b1
1. Edition
En

VE 5/10 F 2400 L 45 (P)
0 460 405 005; 006

supersedes –
company: VW/Volvo
engine: 069.3

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02 (0,04)

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	2,6-3,0	mm		
1.2 Supply-pump pressure	1400	4,9-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	33,5-34,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	375	6,0-8,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.56,0	cm³/1000 strokes		
1.6 Start	2500	22,0-26,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2400
	mm	1,4-2,4(1,2-2,6)	(2,1-3,5)	5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min	500		2400
	bar (kgf/cm²)	2,8-3,4		7,4-8,1
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650	max.13,0		
	2500		(20,0-28,0)	
	2400	28,0-31,0	(27,2-31,8)	
	1400		(31,7-36,3)	
	750	24,5-27,5	(23,0-29,0)	
switch-off	2400	0		
Idle stop	500	max.3,0		
	375		(4,0-12,0)	
End stop	400	min.23,0		
	500	max.23,0		
2.4 Solenoid	cut-in voltage	min.10 V		
		rated voltage 12V		

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max.3,0
K XK	18,5-20,5
B XL	9,0-12,5

Observations

D17

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,0a
1. Edition
En

VE 5/10 F 2400 L 35 (P)
0 460 405 001; 002

supersedes VWW
company: Audi 100
engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,14 mm ± 0,02 (0,04)

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	2,6-3,0	mm		
1.2 Supply-pump pressure	1400	5,0-5,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	33,5-34,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	375	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.56,0	cm³/1000 strokes		
1.6 Start	2500	22,0-26,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	2400
	mm	1,4-2,4(1,2-2,6)	(2,1-3,5)	5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min	500		2400
	bar (kgf/cm²)	2,8-3,4		7,4-8,1
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650	7,0-11,0	(5,0-13,0)	
	2500		(20,0-28,0)	
	2400	28,0-31,0	(27,2-31,8)	
	1400		(31,7-36,3)	
	750	24,5-27,5	(23,0-29,0)	
switch-off	2400	0		
Idle stop	500	max.3,0		
	375		(4,0-12,0)	
End stop	400	min.23,0		
	500	max.23,o		

2.4 Solenoid	cut-in voltage	min.10,0 V rated voltage 12V

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max.3,0
A XK	18,5-20,5
B XL	9,0-12,5

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 3,7d
1. Edition
En

Testoil-ISO 4113

VE 4/10 F 900 R 57-3
0 460 404 016

supersedes –
company: MAN
engine: D 0224 ME

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	850	4,5-4,9	mm		
1.2 Supply-pump pressure	850	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	850	57,0-58,0	cm³/1000 strokes		2,5(3,5)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	10,0-14,0	cm³/1000 strokes		2,5(3,5)
1.5 Full-speed regulation	100	min. 60,0	cm³/1000 strokes		
1.6 Start	900	45,0-51,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	850	900
	mm	1,7-2,5(1,4-2,8)	(4,0-5,4)	4,8-5,6(4,5-5,9)
2.2 Supply pump	n = rev/min	500		
	bar (kgf/cm²)	3,3-3,9		
Overflow delivery	n = rev/min	500		900
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	930	max.10,0		
	900		(43,5-52,5)	
	850	57,0-58,0	(54,8-60,2)	
	500	51,5-55,5	(50,1-56,9)	
switch-off	900	0		
Idle stop	400-450	0		
	350		(7,5-16,5)	
End stop	400	min.55,0		
	500	max.55,0		

2.4 Solenoid cut-in voltage rated voltage 24V

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,7-5,9
MS	1,1-1,3
SVS	3,9-4,1
XK	25,0-27,0
XL	13,2-16,5

Observations
pushing electronagnet 24 V

D20

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 3,7A
1.Ausgabe

En

Testoil-ISO 4113

VE 4/10 F 1500 R 42
0 460 404 007

supersedes company MAN engine D 0224 M

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/

Pre-stroke setting 0,2 mm ± 0,02(0,04) mm

1. Settings	Rot speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1 1 Timing device travel	1000	5,3-5,7	mm		
1 2 Supply pump pressure	1000	5,5-6,1	bar (kgf/cm²)		
1 3 Full-load delivery without charge-air pressure	1000	61,5-62,5	cm³/1000 strokes		2,5(3,5)
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1 4 Idle speed regulation	350	10,0-14,0	cm³/1000 strokes		2,5(3,5)
1 5 Start	100	min. 60,0	cm³/1000 strokes		
1 6 Full-load speed regulation	1650	7,0-13,0	cm³/1000 strokes		
1 7 Load-dependent start of delivery	--	--			

2. Test Specifications

checking values in brackets ( )

2 1 Timing device	n = rev/min	600	1000	1400
	mm	2,6-3,4(2,3-3,7)	(4,8-6,2)	7,6-8,4(7,3-8,7)
2 2 Supply pump	n = rev/min	600		1500
	bar (kgf/cm²)	3,6-4,2		7,0-7,6
Overflow delivery	n = rev/min	500		1500
	cm³/10 s	55-110(40-125)		55-110(40-125)

2 3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1700-1800	0		
	1650		(5,5-14,5)	
	1550	max.60,0		
	1500	68,5-71,5	(67,35-72,65)	
	1000		(59,35-64,65)	
	600	57,25-60,75	(55,6-62,4)	
switch-off	1500	0		
Idle stop	380-430	0		
	350		(7,5-16,5)	
Endanschlag	400			
	470			

2 4 Solenoid		
	max cut-in voltage	xxx min. 10,0 V
	test voltage	xxxxxxxxx Nennspannung 12,0 V

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,7-5,9
MS	1,3-1,5
SVS	max.2,0
AXK	18,6-20,6
BXL	9,7-13,5

Observations

D 21

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 5,5b
1. Edition
En

VE 5/11 F 1125 R 58-1
0 460 415 002

supersedes -
company: Fiat
engine: 8055.04.250

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	900	4,8-5,2	mm		
1.2 Supply-pump pressure	900	4,5-5,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	900	65,0-66,0	cm³/1000 strokes		2,5(3,5)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	11,5-15,5	cm³/1000 strokes		2,5(3,5)
1.5 Full-speed regulation	100	min. 70,0	cm³/1000 strokes		
1.6 Start	1175	35,0-41,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	900	1100
	mm	1,1-1,9(0,8-2,2)	(4,3-5,7)	6,3-7,1(6,0-7,4)
2.2 Supply pump	n = rev/min	400		1100
	bar (kgf/cm²)	2,7-3,3		5,5-6,1
Overflow delivery	n = rev/min	500		1125
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1270-1370	0	
	1175	(33,5-42,5)	
	1125	63,2-65,8 (61,8-67,2)	
	900	(62,8-68,2)	
	500	54,25-57,75(52,6-59,4)	
switch-off	1125	0	
Idle stop	420-500	0	
	350	(9,0-18,0)	
End stop	150	min.70,0	
	250	max.70,0	

2.4 Solenoid	cut-in voltage	min.10,0 V rated voltage 12V

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,4-5,6
MS	1,5-1,7
SVS	4,3-4,5
A XK	25,0-27,0
B XL	9,2-12,5

Observations

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
1980 by Robert Bosch GmbH, Postfach 50, D-7000 Stuttgart 1 Printed in the Federal Republic of Germany
Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,3 A
1. Edition
En

VE 4/8 F 2500 R 61
0 460 484 006

supersedes
company: FIAT/FIASA
engine: X8/29

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1600	5,6-6,0	mm		
1.2 Supply-pump pressure	1600	4,5-5,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1600	20,0-21,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	8,0-14,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.29,0	cm³/1000 strokes		
1.6 Start	2650	9,0-15,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1600	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1600	2000		2400
	mm	2,4-3,2(2,1-3,5)	(5,1-6,5)7,8-8,4(7,4-8,8)			9,4-10,2(9,1-10,5)
2.2 Supply pump	n = rev/min	400				2500
	bar (kgf/cm²)	1,1-1,7				7,2-7,8
Overflow delivery	n = rev/min	500				2500
	cm³/10 s	55-110(40-125)				55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800-2950			
	2750	2,0-8,0	(1,0-9,0)	
	2650		(8,0-16,0)	
	2500	19,3-21,7	(18,2-22,8)	
	2000	20,0-22,0	(18,7-23,3)	
	1600		(18,2-22,8)	
	600	16,0-19,0	(14,5-20,5)	
switch-off	2500	0		
Idle stop	550	0		
	450	max.4,0		
	350		(7,0-15,0)	
End stop	400	min. 24,0		
	500	max. 26,0		

2.4 Solenoid — cut-in voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,0-3,2
KF	5,7-5,9
MS	1,4-1,5
SVS	max.3,0
+FH	1,8-2,4
AX XK	20,2-22,2
BX XL	8,8-12,2

Observations
+ operating stroke (cold-start accel.)

D23

BOSCH

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 FIA 1,7 A
1. Edition
En

VE 4/9 F 2300 R 54
0 460 494 044

supersedes –
company: Fiat
engine: X 8/28

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,3-4,7	mm		
1.2 Supply-pump pressure	1500	5,1-5,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	34,2-35,2	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	8,0-12,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.48,0	cm³/1000 strokes		
1.6 Start	2400	16,0-22,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1500	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1500	2300
	mm	1,8-2,6(1,5-2,9)	(3,8-5,2)	7,1-7,9(6,8-8,2)
2.2 Supply pump	n = rev/min	400		2300
	bar (kgf/cm²)	2,5-3,1		6,9-7,5
Overflow delivery	n = rev/min	500		2300
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	6,0-12,0	(5,0-13,0)	
	2400		(15,0-23,0)	
	2250	28,0-30,0	(26,7-31,3)	
	1500		(32,4-37,0)	
	600	23,5-26,5	(22,0-28,0)	
switch-off	2300	0		
Idle stop	400-540	0		
	400	max.4,0		
	350		(6,0-14,0)	
End stop	400			
	480			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	max.3,5
A X XK	20,1-22,1
B X XL	9,5-13,3

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 2,3 b
1. Edition
En

VE 6/10 F 2400 L 32-1 (P)
0 460 406 009; 010

supersedes
company: VW
engine: 087/10 Autom.

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,0-3,4	mm		
1.2 Supply-pump pressure	1500	5,1-5,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	27,0-28,0	cm³/1000 strokes		
Full-load delivery without charge-air pressure	-	-	cm³/1000 strokes		2,5(3,0)
1.4 Idle regulation	350	10,0-14,0	cm³/1000 strokes		
1.5 Full-speed regulation	100	min. 45,0	cm³/1000 strokes		2,5(3,0)
1.6 Start	2600	15,5-21,5	cm³/1000 strokes		
1.7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2000	2400
	mm	0,8-1,6(0,5-1,9)	(2,5-3,9)	4,5-5,3(4,2-5,6)	5,4-6,2(5,1-6,5)
2.2 Supply pump	n = rev/min	600			2400
	bar (kgf/cm²)	2,7-3,5			6,6-7,4
Overflow delivery	n = rev/min	500			2400
	cm³/10 s	55-110(40-125)			55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	7,0-11,0		
	2600		(14,5-22,5)	
	2400	23,5-25,5	(22,2-26,8)	
	1500		(25,2-29,8)	
	750	26,5-29,5	(25,0-31,0)	
switch-off	2400	0		
Idle stop	400	3,0-9,0		
	350		(8,0-16,0)	
End stop	400	min.30,0		
	500	max.30,0		

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max.3,0
Ax XK	18,5-20,5
Bx XL	9,2-12,9

Observations

Stop check (lever) at n = 2400 min/1

E1

E1

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VMA
1. Edition
En

VE 5/11 F 2150 L 101
0 460 415 003

supersedes –
company: VM-Cento
engine: HR 588 HT

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1800	5,9-6,3	mm	0,75	
1.2 Supply-pump pressure	1800	6,3-6,9	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	32,5-35,5	cm³/1000 strokes	0	2,5(4,0)
Full-load delivery without charge-air pressure	2000	38,5-39,5	cm³/1000 strokes	0,75	
1.4 Idle regulation	400	9,0-13,0	cm³/1000 strokes	0	2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0	cm³/1000 strokes	0	
1.6 Start	2400	11,5-17,5	cm³/1000 strokes	0,75	
1.7 Load-dependent port-closing	–	–			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1800	2150
	mm	1,7-2,5(1,4-2,8)	4,5-5,1 (4,1-5,5)	(5,4-6,8)	7,5-8,3(7,2-8,6)
2.2 Supply pump	n = rev/min	600			2150
	bar (kgf/cm²)	2,3-2,9			7,5-8,1
Overflow delivery	n = rev/min	500			2150
	cm³/10 s	55-110(40-125)			55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2450	3,0-9,0	(1,5-10,5)	0,75
	2400		(10,0-19,0)	0,75
	2150	35,7-38,3	(34,3-39,3)	0,75
	2000		(36,3-41,7)	0,75
	1500	42,7-45,3	(41,3-46,7)	0,75
	700	40,5-43,5	(38,6-45,4)	0,3
	600		(30,6-37,4)	
switch-off	2150	0		
Idle stop	800	max. 3,0		
	400		(6,5-15,5)	
End stop	420			
	500			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	–
KF	5,9-6,1
MS	0,9-1,1
SVS	3,0
A X XK	20,2-22,2
B X XL	9,7-13,1

Observations

E2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 STE 5,0d
1. Edition
En

VE 6/11 F 1150 R 92
0 460 416 020

supersedes -
company: Steyr
engine: WD 611.85

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	5,5-5,9	mm		
1.2 Supply-pump pressure	1000	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1100	65,0-66,0	cm³/1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	300	14,0-18,0	cm³/1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 65,0	cm³/1000 strokes		
1.6 Start	1200	24,5-30,5	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	700	1000	1150
	mm	1,9-2,7(1,6-3,0)	(5,0-6,4)	7,0-7,8(6,7-8,1)
2.2 Supply pump	n = rev/min	300		1150
	bar (kgf/cm²)	2,6-3,2		7,0-7,6
Overflow delivery	n = rev/min	500		1150
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1250-1300	0		
	1200		(23,0-32,0)	
	1100		(62,8-68,2)	
	800	61,0-63,0	(59,3-64,7)	
	500	57,5-60,5	(55,6-62,4)	
switch-off	1150	0		
Idle stop	360-420	0		
	300		(11,5-20,5	
End stop	200			
	280			
2.4 Solenoid	cut-in voltage			

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,2-5,4
MS	1,3-1,5
SVS	max.6,0
K XK	20,2-22,2
B XL	10,5-13,8

Observations

E3

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 SOF 2,5
1. Edition
En

VE 4/9 F 2200 R 88
0 460 494 091

supersedes -
company: Sofim
engine: 8/44.65.201

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2100	8,3-8,7	mm		
1.2 Supply-pump pressure	2100	7,0-7,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	2100	30,5-31,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.30,0	cm³/1000 strokes		
1.6 Start	2400	19,0-25,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	2100	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	1200	2100
	mm	2,0-3,0(0-5,5)	4,9-5,5(2,9-7,5)	(6,2-10,8)
2.2 Supply pump	n = rev/min	400		2200
	bar (kgf/cm²)	2,9-3,5		7,3-7,9
Overflow delivery	n = rev/min	500		2200
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2550	max.4,0		
	2400		(18,0-26,0)	
	2200	29,8-31,8	(28,5-33,1)	
	2100		(28,7-33,3)	
	1200	34,5-37,5	(33,7-38,3)	
	600	25,0-29,0	(24,0-30,0)	
switch-off	2200	0		
Idle stop	410-500	0		
	350		(4,0-12,0)	
End stop	400			
	500			

2.4 Solenoid — cut-in voltage: min. 10,0 V, rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,7-5,9
MS	0,9-1,1
SVS	max.2,6
+FH	1,8-2,4
A XK	25,0-27,0
B XL	8,9-12,3

Observations

+ operating stroke (cold-start accel.)

E4

E4

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6a1
1. Edition
En

Testoil-ISO 4113

VE 6/11 F 1500 R 55
0 460 416 009

supersedes –
company: MAN
engine: D 0226 MF

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,6 mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	6,0-6,4	mm		
1.2 Supply-pump pressure	1000	5,7-6,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	63,5-64,5	cm³/1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	300	8,0-12,0	cm³/1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0	cm³/1000 strokes		
1.6 Start	1600	24,0-30,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1400
	mm	3,7-4,5(3,4-4,8)	(5,5-6,9)	8,9-9,7(8,6-10,0)
2.2 Supply pump	n = rev/min	600		1500
	bar (kgf/cm²)	4,2-4,8		7,0-7,6
Overflow delivery	n = rev/min	500		1500
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1680	max.8,0	
	1600	(22,5-31,5)	
	1500	69,25-71,75(67,8-73,2)	
	1000	(61,3-66,7)	
	600	45,75-49,25(44,1-50,9)	
switch-off	1500	0	
Idle stop	390-460	0	
	300	(5,5-14,5)	
End stop	450		
	530		

2.4 Solenoid	cut-in voltage	min.20,0 V rated voltage 24,0 V

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	--
KF	5,7-5,9
MS	1,2-1,4
SVS	max.4,7
K	25,0-27,0
L	11,8-15,2

Observations

pushing electronagnet

E5

Test Specifications Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

VE 6/11 F 750 R 55-2

0 460 416 017

supersedes –
company: MAN
engine: D 0226 ME

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,6 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	750	4,0-4,4	mm		
1.2 Supply-pump pressure	600	4.3-4,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	700	54,5-55,5	cm³/1000 strokes		3,5 (4,0)
Full-load delivery without charge-air pressure	-	-	cm³/1000 strokes		
1.4 Idle regulation	300	7,0-13,0	cm³/1000 strokes		3,0 (4,0)
1.5 Full-speed regulation	100	min. 50	cm³/1000 strokes		
1.6 Start	750	44,0-50,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	750
	mm	1,0-1,8(0,7-2,1)	(3,5-4,9)
2.2 Supply pump	n = rev/min	300	750
	bar (kgf/cm²)	2,7-3,3	5,0-5,6
Overflow delivery	n = rev/min		750
	cm³/10 s		55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	820	max. 2,0	
	750	(42,5-51,5)	
	700	(52,4-57,6)	
	600	49,0-53,0(47,6-54,4)	
switch-off	750	0	
Idle stop	460	max. 2,0	
	300	(5,5-14,5)	
End stop	400	min. 60	
	500	max. 60	

2.4 Solenoid — cut-in voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,7-5,9
MS	1,2-1,4
SVS	4,6-4,8
K	25,0-27,0
L	11,2-14,2

Observations

E6

E6

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6d
1. Edition

En

Testoil-ISO 4113

VE 6/11 F 900 R 55-3
0 460 416 018

supersedes company: MAN
engine: D 0226 ME

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,6 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	850	4,9-5,3	mm		
1.2 Supply-pump pressure	850	5,5-6,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	880	55,0-56,0	cm³/1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	300	7,0-13,0	cm³/1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0	cm³/1000 strokes		
1.6 Start	900	44,0-50,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	850
	mm	3,3-4,1(3,0-4,4)	(4,4-5,8)
2.2 Supply pump	n = rev/min	600	
	bar (kgf/cm²)	4,5-5,1	
Overflow delivery	n = rev/min	500	500
	cm³/10 s	55-110(40-125)	55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	950-1000	0		
	900		(41,5-51,5)	
	880		(52,8-58,2)	
	600	40,5-44,5	(39,1-45,9)	
switch-off	900	0		
Idle stop	360-410	0		
	300		(5,5-14,5)	
End stop	450	min.45,0		
	530	max.44,5		

2.4 Solenoid	cut-in voltage	min.10,0 V
		rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,7-5,9
MS	1,2-1,4
SVS	4,6-4,8
XK	25,0-27,0
XL	11,8-15,2

Observations
pushing electronagnet

E7

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6e
1. Edition

En

Testoil-ISO 4113

VE 6/11 F 1500 R 55-4

0 460 416 019

supersedes –
company: MAN
engine: D 0226 ME

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,6 mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	6,0-6,4	mm		
1.2 Supply-pump pressure	1000	5,7-6,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	58,5-61,5	cm³/1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	300	7,0-13,0	cm³/1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0	cm³/1000 strokes		
1.6 Start	1500	30,5-36,5	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1400
	mm	3,7-4,5(3,4-4,8)	(5,5-6,9)	8,9-9,7(8,6-10,0)
2.2 Supply pump	n = rev/min	600		1400
	bar (kgf/cm²)	4,2-4,8		7,2-7,8
Overflow delivery	n = rev/min	500		1500
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1570-1610	0	
	1500	(29,0-38,0)	
	1400	64,5-67,5 (63,3-68,7)	
	1000	(57,3-62,7)	
	600	39,5-43,5 (38,1-44,9)	
switch-off	1500	0	
Idle stop	390-460	0	
	300	(5,5-14,5)	
End stop	450	min.45,0	
	530	max.44,5	

2.4 Solenoid		
	cut-in voltage	min.10,0 V
		rated voltage 12V

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	--
KF	5,7-5,9
MS	1,2-1,4
SVS	4,6-4,8
AXK	25,0-27,0
BXL	13,5-16,8

Observations
pushing electronagnet

E8

E8

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6 b

2. Edition

En

VE 6/11 F 1500 R 49
0 460 416 008

Overflow temperature 45° C

supersedes MAN
company: D 0226 M
engine:

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,6 mm ± 0,02(0,04) mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	6,0-6,4	mm		
1.2 Supply-pump pressure	1000	5,7-6,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	-	-	cm³/1000 strokes		
Full-load delivery without charge-air pressure	1000	63,5-64,5	cm³/1000 strokes		2,5 (4,0)
1.4 Idle regulation	300	8,0-12,0	cm³/1000 strokes		2,5 (4,0)
1.5 Full-speed regulation	1550	52,0-58,0	cm³/1000 strokes		
1.6 Start	100	min. 60,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	-	.			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1400
	mm	3.8-4,6(3,5-4,9)	(5,5-6,9)	8,7-9,5 (8,4-9,8)
2.2 Supply pump	n = rev/min	400		1500
	bar (kgf/cm²)	3,2-3,8		7,3-7,9
Overflow delivery	n = rev/min	500		1500
	cm³/10 s	55-110 (40-125)		55-110 (40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1680	max. 4,0		
	1630	12,0-21,0		
	1550		(50,5-59,5)	
	1500	69,5-71,5	(67,9-73,2)	
	1000		(61,3-66,7)	
	600	46,0-49,0	(44,1-50,9)	
switch-off	1500	0		
Idle stop	400-470	0		
	300		(5,5-14,5)	
End stop	370			
	470			

2.4 Solenoid — cut-in voltage: min 20,0 V; rated voltage 24,0 V

3. Dimensions

for assembly and adjustment

Designation	mm
K	-
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 4,6
^{A}XX XK	18,6-20,6
^{B}XX XL	9,0-12,8

Observations

Pulling electromagnet

E9

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 5,6a
1. Edition

En

Testoil-ISO 4113

VE 6/11 F 1500 R55-1 Overflow temperature 45° C

0 460 416 016

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes –
company: MAN
engine: D 0226 ME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,6 mm ± 0,02(0,04) mm

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	6,0-6,4	mm		
1.2 Supply-pump pressure	1000	5,7-6,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	63,5-64,5	cm³/1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	300	8,0-12,0	cm³/1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 50,0	cm³/1000 strokes		
1.6 Start	1600	24,0-30,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1400
	mm	3,7-4,5(3,4-4,8)	(5,5-6,9)	8,9-9,7(8,6-10,0)
2.2 Supply pump	n = rev/min	600		1500
	bar (kgf/cm²)	4,2-4,8		7,0-7,6
Overflow delivery	n = rev/min	500		1500
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	1680	max.8,0	
	1600	(22,5-31,5)	
	1500	69,25-71,75(67,8-73,2)	
	1000	(61,3-66,7)	
	600	45,75-49,25(44,1-50,9)	
switch-off	1500	0	
Idle stop	390-460	0	
	300	(5,5-14,5)	
End stop	450		
	530		

2.4 Solenoid — cut-in voltage 20,0 V, rated voltage 24,0 V

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 4,6
AK	25,0-27,0
AL	11,8-15,2

Observations: Pulling electromagnet

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 STE 6,5a
1. Edition
En

VE 6/11 F 1300 R 98 Overflow temperature 45° C
0 460 416 021

supersedes -
company: Steyr
engine: WD 612.01

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	2,6-3,0	mm		
1.2 Supply-pump pressure	1000	6,1-6,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1280	67.0-68,0	cm³/1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	300	14,0-18,0	cm³/1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 95,0	cm³/1000 strokes		
1.6 Start	1450	18,0-24,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1280
	mm	0,9-1,7(0,6-2,0)	(2,1-3,5)	3,8-4,6(3,5-4,9)
2.2 Supply pump	n = rev/min	300		1300
	bar (kgf/cm²)	3,4-4,0		7,2-7,8
Overflow delivery	n = rev/min	500		1300
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1500-1550	0		
	1450		(16,5-25,5)	
	1280		(64,8-70,2)	
	1000	72,0-74,0	(70,3-75,7)	
	500	78,5-72,5	(67,1-73,9)	
switch-off	1300	0		
Idle stop	370-430	0		
	300		(11,5-20,5)	
End stop	200			
	280			

2.4 Solenoid — cut-in voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,4-5,6
MS	1,3-1,5
SVS	max.6,0
AK XK	20,2-22,2
BK XL	8,7-12,0

Observations

E11

E11

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

⑥ Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 STE 4,0 F
1. Edition

En

VE 4/11 F 1200 R 94 Overflow temperature 45° C
0 460 414 003

supersedes -
company: Steyr
engine: WD 411.85

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	4,8-5,2	mm		
1.2 Supply-pump pressure	1000	5,6-6,2	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	63,0-65,0	cm³/1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	300	18,0-22,0	cm³/1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 80,0	cm³/1000 strokes		
1.6 Start	1300	9,5-15,5	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1180
	mm	1,4-2,2(1,1-2,5)	(4,3-5,7)	6,3-7,1(6,0-7,4)
2.2 Supply pump	n = rev/min	500		1180
	bar (kgf/cm²)	3,0-3,6		6,6-7,2
Overflow delivery	n = rev/min	500		1200
	cm³/10 s	55-100(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1320-1370	0		
	1300		(8,0-17,0)	
	1180	65,5-66,5	(63,3-68,7)	
	1000		(61,3-66,7)	
	500	56,0-59,0	(54,1-60,9)	
switch-off	1200	0		
Idle stop	350-410	0		
	300		(15,5-24,5)	
End stop	200	min.80,0		
	280	max.80,0		

2.4 Solenoid — cut-in voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,2-5,4
MS	0,9-1,1
SVS	max.3,0
X XK	20,2-22,2
B X XL	10,3-13,8

Observations

E12

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6c
1. Edition

En

VE 4/9 F 2400 R 66-13
Overflow temperature 45° C
0 460 494 084

supersedes
company: VWW
engine: Passat-Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,1-3,5	mm		
1.2 Supply-pump pressure	1500	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	33,0-34,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	475	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes		
1.6 Start	2600	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2400
	mm	1,4-2,2(1,1-2,5)	(2,6-4,0)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	400		2400
	bar (kgf/cm²)	2,1-2,7		7,0-7,6
Overflow delivery	n = rev/min	500		2400
	cm³/10 s	55-115(40-125)		55-115(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2700	2,0-10,0	(2,0-10,0)	
	2600		(10,0-18,0)	
	2400	27,7-30,3	(26,7-31,3)	
	1500		(31,2-35,8)	
	600	21,5-24,5	(20,0-26,0)	
switch-off	2400	0		
Idle stop	1200	max. 7,0		
	650	max. 5,0		
	475		(4,0-12,0)	
End stop	400			
	500			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.2,5
+FH	1,8-2,4
✱ XK	18,4-20,4
✱ XL	10,4-12,8

Observations
+ operating stroke (cold-start accel.)

E13

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 6,6a
1. Edition
En

VE 6/12 F 1250 R 38 (P)
Values only apply to test nozzle-and-holder assembly
1 688 901 020 Overflow temperature 45° C
0 460 426 001/008 Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes IHC
company: DT 402/3994
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,4 mm ± 0,02 (0,04) mm

Testoil-ISO 4113

1. Settings

	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	3,5-4,1	mm		
1.2 Supply-pump pressure	1000	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	900	117,5-118,5	cm³/1000 strokes		2,5(4,5)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	500	15,0-21,0	cm³/1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min. 95,0	cm³/1000 strokes		
1.6 Start	1300	56.0-64,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1200
	mm	1,3-2,1(1,0-2,4)	(3,1-4,5)	4,6-5,4(4,3-5,7)
2.2 Supply pump	n = rev/min	400		1250
	bar (kgf/cm²)	3,2-3,8		5,6-6,2
Overflow delivery	n = rev/min	500		1250
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1370-1420	0		
	1300		(55,0-65,0)	
	1230	108,5-111,5	(107-113)	
	900		(115-121)	
	700	97,0-101,0	(96,0-102,0)	
	500	92,0-96,0	(90,2-97,8)	
switch-off	1250	0		
Idle stop	520-570			
	500		(13,0-23,0)	
End stop	260			
	380			

2.4 Solenoid — cut-in voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,4-5,6
MS	0,8-1,0
SVS	4,6-6,0
AK XK	20,2-22,2
BK XL	9,6-12,9

Observations

E14

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 c 1

3. Edition

En

Testoil-ISO 4113

PES 2 A 80 D 310/3 RS1322 EP/RSV..2011DL (1-2)
PES 3 A 75 ..1185, 1320 EP/RSV 325-1000 A8B733D(3)
PES 4 A 75 ..1183 EP/RSV 325-1400 A8B742D(4)
PES 6 A 75 ..1197 EP/RSV..694D, 742D (5-6)
PES4A80..1300, PES3A80..1324, PES6A75..1326 (7)

supersedes 5.78
company K H D
engine F.. L912

Type designations and notes see page 5!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 7,5Ø cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery 8Ø cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	5,2 - 5,6	0,4	9	3,1 - 3,5	
	9	2,7 - 3,5		6	0,1 - 0,6	
200	9	0,7 - 1,4		9	0,6 - 1,3	

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

325-1400 A8B2011D (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.66	1400	12,0	without auxiliary spring			ca.20	325	5,5	1400	0
	1430	8,5					200	19 - 21		
	1460	4,8					325	5,2-5,8	600	0,9-1,
	1440	ca. 10,5	with auxiliary spring				450	2,7-4,1		
(5)	1490	ca. 4,0					660	0 -1,5		
	1600	0,3 - 1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
(1) 1400	60,0 - 61,0 (58,5 - 62,5)	1440-1450*	750	54,5 - 56,5 (52,5 - 58,5)			325	5,5

Checking values in brackets

* 1 mm less control rod travel than col 2

10.78

E15

325-900 A7B2011D (2)

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.	900	16,0	without auxiliary spring			ca.26	325	6,0	880	0
	950	10,0					150	19 - 21	400	0,9-1,1
	980	4,0					325	5,7-6,3		
	900	ca. 11,6	with auxiliary spring				450	1,5-3,7		
(5)	1000	ca. 4,0					550	0 - 1		
	1080	0,3 -1,5								

(1A)

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
(2) 900	55,0 - 56,0 (53,5 - 57,5)	940-950 *	(6a)				325	6,0

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

325-1000 A8B733D (3)

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.48	1000	16,0	without auxiliary spring			ca.19	325	5,5	1000	0
	1060	10,0					100	19 - 21		
	1110	4,0					325	5,2-5,8	500	0,9-1,1
	1000	ca. 9,0	with auxiliary spring				400	1,2-3,0		
(5)	1080	ca. 4,0					500	0 - 1		
	1200	0,3 -1,0								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm³/1000 strokes		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
(3) 1000	46,0 - 48,0	1040-1050 *					325	5,5

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

325-1400 A8B742D (4)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1400 1430 1460	12,0 8,5 4,8	without auxiliary spring			ca.20	325	5,5	1400	0
							200 325 450 660	19 - 21 5,2-5,8 2,8-4,1 0 - 1	1000 500	0,2-0,4 0,9-1,1
(5)	1420 1500 1580	9,2-10,4 2,0- 3,4 0,3- 1	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
(4) 1400	54,5 - 56,5	1430-1440*	800 (6a)	49,5 - 52,5			325	5,5

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

325-1150 A8B694D (5)

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.54	1150 1190 1210	12,0 7,8 5,0	without auxiliary spring			ca.21	325	5,5	1150	0
							200 325 400 500	19 - 21 5,2-5,8 1,6-3,5 0 - 1	450	0,9-1,1
(5)	1130 1200 1210	8,0-9,6 5,0-7,5 0,3-1,0	with auxiliary spring							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
(5) See page 5!		1160-1170					325	5,5

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	1400	12,0	without auxiliary spring			ca.20	325	5,5	1400	0
	1430	8,5					200	19 - 21		
	1460	4,8					325	5,2-5,8	1000	0,2-0,4
	1420	9,2-10,4	with auxiliary spring				450	2,8-4,1	500	0,9-1,1
(5)	1500	2,0- 3,4					660	0 - 1		
	1580	0,3- 1								

(1A)

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel deliver Idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
(6) 1400	58,0 - 60,0	1430-1440*	800 (6a)	51,0 - 54,0			325	5,5

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

1. Type designations and power outputs

Engine Pump	Output at speed	- Manufacturer Governor	Item as	or
F 2 L 912 -	30 kw (38HP) at 2400 min.			
PES 2 A 80 D 310/3 RS 1322		EP/RSV 325-1400 A 8 B 201 DL	1	
F 2 L 912 -	18 kw (25HP) at 1800 min.			
PES 2 A 80 D 310/3 RS 1322		EP/RSV 325-900 A 7 B 2011 DL	2	
F 3 L 912 -	27 kw (37HP) at 2000 min. - Fendt			
PES 3 A 75 D 410/3 RS 1185		EP/RSV 325-1000 A 8 B 733 DL	3	
F 4 L 912 -	54 kw (73HP) at 2800 min. - Berliet			
PES 4 A 75 D 410/3 RS 1183		EP/RSV 325-1400 A 8 B 742 DL	4	
F 6 L 912 -				
PES 6 A 75 D 410/3 RS 1197		EP/RSV 325-1150 A 8 B 694 DL	5	- KHD 1 c
F 6 L 912 -	81 kw (110HP) at 2800 min. - Berliet			
PES 6 A 75 D 410/3 RS 1197		EP/RSV 325-1400 A 8 B 742 DL	6	
F 4 L 912 -				
PES 4 A 80 D 410/3 RS 1300		EP/RSV..	7	- KHD 1 c
F 3 L 912 -				
PES 3 A 80 D 410/3 RS 1324		EP/RSV..	7	- KHD 1 c
F 6 L 912 -				
PES 6 A 75 D 410/3 RS 1326		EP/RSV..	7	- KHD 1 c

2. Notes

The remarks given under (7) and the governors (Items 1..6) are also used with the injection pumps and governors listed on KHD 1 c. The full-load deliveries for the possible combinations are given on KHD 1 c on pages 7 - 18 and on the present pages 1 - 4.

Test Specifications Fuel Injection Pumps and Governors

(1A)

WPP 001/4 MB 5,7 w5
3. Edition

40

En

PES 6 A 90 D 410 RS 2569 RSV 350-1400 A0B 1135 L

supersedes 8.81
company Daimler Benz
engine OM 352
92 kW (125 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,20-2,40) 2,25-2,35 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,8+0,1	6,2-6,3	0,3(0,45)			
350	7,9-8,0	0,5-1,1	0,2(0,4)			
500	11,3-0,1	C, col.4-5	0,4(0,55)			
900	10,8-0,2	C, col.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.21	350	4,1	1400	10,8+0,1
	x =	5,0							750	10,8+0,3
ca.70 (2a)	1440-1450 = 9,8 1495-1525 = 4,0 1650=0,3-1,7						350 580-640	7,9-8,0 = 2,0	500	11,3+0,1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	(5) cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1400	62,5-63,5 (60,5-65,5)	1440-1450*	500	44,5-47,5 (42,5-49,5)	100	79,25-89,25 16,2-16,6 mm RW	-	-
			900	53,5-56,5 (51,5-58,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

2.82

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

E20

Test Specifications Fuel Injection Pumps (1A) and Governors

VDT-WPP 001/4
2. Edition

En

PES 6 A 100 D 410 RS3020 EP/RSV 400-1100 A 7 B 700 L

supersedes 10.74
company John Deere
engine 6404 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0+0,1 mm (from BDC) Port closing mark 14 ° after port closing.

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,5 - 8,8				
	6	3,2 - 4,2				
	12	12,4 -13,4				
200	9	4,0 - 5,2				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.66	1100	12,0	without auxiliary spring	ca.26	400	6,3	1080	0
	1120	6,2			150	19-21		
	1100	11,5-12,5			400	6,0-6,6		
	1140	2,0- 5,0			430	3,0-4,6	-	-
(2a)	1240	0,3- 1,0			500	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1080	107,5-109,5	1110-1120*			100	15,6-17,6	400	11,5-15,5 cm³/1000
			150	11,5 - 21,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

6.75

E21

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 v 3
8. Edition

En

PES 6 A 90 D 410 RS 2596 RSV 575-1250 A 1 B 618 L

1 - 5 - 3 - 6 - 2 - 4

= -60 -12 -180-240-300° ±0,5° (± 0,75°)

Speed difference between control-rod travel reduced 1 mm by governor and control-rod travel position 4 mm = 25-35 min/1.

supersedes 10.80
company Daimler-Benz
engine OM 352 A
115 kW (156 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	13,2+0,1	7,7 - 7,8	0,3(0,45)			
575	7,2-7,4	0,8 - 1,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.29	575	7,3		
	x =	4,0					100	min.19,0		
ca.60	1250-1260	=12,2					575	7,2- 7,4		
(2a)	1275-1295	= 5,5					675	1,0		
	1445	=0,3-1,7					585-645	2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1230	77,5-78,5 (75,5-80,5)	1250-1260*			100	16,0-16,6 mm RW 79,25-89,25		
					575	9,25-15,25		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.82

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,8 n 8 **40**

(1A) 1. Edition

PES 4 A 90 D 410 RS 2570 RSV 350-750 AOB 764 L En

supersedes -

company Daimler Benz

engine OM 314

Generating sets

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35 (2,2 -2,4) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,3+0,1	4,8 - 4,9	0,3(0,45)			
350	8,8-9,0	1,1 - 1,7	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0		-	-	-	ca.15	350	8,9	-	-
	x = 3,5						100	min.19,0		
ca.26	10,3 750-755						350	8,8- 9,0		
(2a)	4,0 785-795						380-440	=2,0mm**		
	875 0,3-1,7									

** Set idle-speed auxiliary spring at 2 mm control-rod travel,

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
700	48,0-49,0 (46,0-51,0)	750-755*	-	-	100	79,25-89,25 bei 16,3-16,7 mmRW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.82

E 23

Test Specifications Fuel Injection Pumps and Governors (1A)

40

VDT-WPP 001/4
1. Edition

En

PES 6 A 100 D 420 LS3024 EP/RSV 375-1050 A2B785D

supersedes -
company Case
engine A 504 BDT (210 BHP)

Test with case overflow valve!
Pay attention to special governor setting!

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,0	13,9 - 14,1	0,3(0,6)			
	(+0,1)					
375	6,1 (±0,1)	1,7 - 2,1	0,3(0,5)			
700/600-	Sect. C, Col. 4-5		0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.42	1060 12,0 1100 8,8 1150 3,7		without auxiliary spring			ca.22	375	6,1	1050	0
(2a)	1095 ca. 11,0 1175 ca. 3,9 1240 0,3-1,0		with auxiliary spring				170 375 485 560	19-21 5,0-6,2 ca. 2,0 0 - 1	400	0,7-1,1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
1050	139,0-141,0 (138,2-141,7)	1090-1100* (1085-1105)	700	151,0-155,0 (150,5-155,5)	100	133-139 (131-141)	375	6,1
			600	max. 154,0 (max. 156,0)	375	17,5-21,5 (16,5-22,5)		
			1175	11,5- 17,5 (9,5- 19,5)				
			dispersion max.4(6)					

Checking values in brackets

* 1 mm less control rod travel than col 2

3.76

E24

E24

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4
1. Edition

40

En

PES 6 A 100 D 420 LS3024 EP/RSV 375-1100 A2 B798DR

supersedes -
company Case
engine A 504 BDT

Pay attention to special setting as per W 400/307 for Case CO.!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,8-10,9	12,6-12,8	0,3(0,6)			
375	5,9- 6,1	1,7- 2,1	0,3(0,5)			
750/600	- - -	C, col.4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 . 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0			ca.22	375	5,5	1100	10,8-10,9
	x = 4,2				100	min.19	750	11,5-11,7
					375	5,9-6,1		
ca.43	1140-1150 =9,8				450-520	= 2,0	600	11,7-11,8
(2a)	1210-1220 =4,0				650	0 - 1		
	1300 0,3-1,7							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	126,0-128,0 (125,0-129,0)	1140-1150*	750	134,0-138,0 (133,5-138,5)	100	133-139 (130-142)		
			600	129,0-137,0 (128,5-137,5)	375	17,5-21,5 (14,5-24,5)		
					1225	13,5-19,5 (11,5-21,5)	dispersion 4 (6)	max.

Checking values in brackets

* 1 mm less control rod travel than col 2

6.79

F1

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 HOR 2,4 a
1. Edition
En

PES 3 A 80 D 410/3 RS 1336 RSV 400-1250 A0B 1123 L

supersedes –
company Holder
engine VD 6001-4
tractor A 60

1 - 2 - 3 je 120° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8 (1,65-1,85) mm (from BDC) RW 9 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1230	11,0+0,1	7,0-7,1	0,2(0,35)			
400	8,2-8,4	0,9-1,5	0,2(0,3)			
Port closing difference between control-rod travel 9 mm and max. 9,0-10,0° camshaft						

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 4,25	-	-	-	ca.24	400	7,8	-	-
ca.50 (2a)	10,0 4,0 1500	1270-1280 1335-1365 0,3- 1,7					100 400 565-625 675	min.19,0 8,2-8,4 = 2,0mm max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1230	70,0-71,0 (68,5-72,5)	1270-1280*	-	-	100	19,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.82

F2

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4
2. Edition

En

PES 6 A 100 D 410 RS3025 EP/RSV 400-1100 A2 B765DL
Test-pressure line 6 x 2 x 600 400-1050 A2 B786DL
Inlet pressure 1.5 bar
Manifold-pressure compensator (LDA) adjustment page 2

supersedes –
company John Deere
engine 6404 A

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,05) mm (from BDC)

Port closing mark cyl. 1 : 14° after port closing

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery with 765 DL cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery with 786 DL cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,2	11,2 - 11,4	0,3(0,6)	1050-11,0	= 11,2-11,4	
	(+0,1)			(+ 0,1)		
400	6,3 (±0,1)	1,1 - 1,5	0,3(0,5)	6,5 (±0,1)	1,1 - 1,5	
750/550-	Sect. C, Col. 4-5		0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

400-1100 A2B765DL

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm (+0,1) 11
ca.43	1100	10,8-10,9		ca.21	400	6,3		
	1140 - 1150	=9,8	without auxiliary spring		200	min. 19	1100	10,8
	1195 - 1205	=4,0			400	6,2-6,4	750	11,6
	1155	9,8 -9,9			480-535	= 2,0	500	11,8
(2a)	1200	ca. 4,0	with auxiliary spring					
	1300	0,3 -1,7			580	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,8 bar		LDA	0,8 bar				
1100	112,0-114,0	1140-1150* (1135-1155)	750	121,5-124,5	100	156 - 176	400	6,3
			LDA	0 bar	400	11,5-15,5		
			550	63,0-69,0	1200	18,5-28,5		

Checking values in brackets

see page 2

* 1 mm less control rod travel than col 2

9.76

F3

The numbers denote the sequence of the tests

B. Governor Settings

400-1050 A2B786DL

① Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	④ Lower rated speed: Control-lever deflection in degrees (7)	rev/min (8)	Control rod travel mm (9)	③ Torque control: rev/min (10)	Control rod travel mm (+0,1) (11)
ca.43	1050 1090- 1155-	11,0-11,1 1100=10,0 1165= 4,0	without auxiliary spring	c.22	400	6,5	1050	11,0
					200	mind.19		
					400	6,4-6,6	900	11,2
②a	1095 1160 1240	10,0-10,1 ca. 4,0 0,3- 1,7	with auxiliary spring		480-530 570	= 2,0 0-1	750	12,0

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	⑥ Rotational-speed limitat. Note: changed to ...) rev/min (3)	③a Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery ⑤ Idle: rev/min (6)	cm³/1000 strokes (7)	④a Idle stop: rev/min (8)	Control rod travel mm (9)
LDA 1050	1,0 bar 112,0-114,0	1090-1100* (1085-1105)	LDA 750	1,0 bar 121,5-124,5	100	156-176	400	6,5
			LDA 550	0 bar 48,0- 54,0	400	11,5-15,5		
					1150	18,5-28,5		

Checking values in brackets

* 1 mm less control rod travel than col. 2

(1050 = 110,0-116,0)

(750 = 119,5-126,5)
(550 = 46,0- 56,0)

D. Adjustment Test for Manifold Pressure Compensator

Preliminary adjustment, dimension H = 21,8 mm

Test at n = 550 rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting: Gauge pressure = bar	Measurement: Gauge pressure = bar	Control rod travel-diminution difference mm (1)
3025 mit 765DL	0,63	0,15	-0,1-0,2 -2,5-2,6
3025 mit 786DL	0,72	0,38	-0,9-1,1 -2,9-3,0
Switching point (hydr. measurement)	max. 0,76	mind. 0,48	10 - 11 mm RW 19 - 21 mm RW

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

Check 3025 with 765DL:

(1100 = 110,0-116,0

(750 = 119,5-125,5)
(550 = 61,0- 71,0)

F4

64

Test Specifications Fuel Injection Pumps and Governors

40

(1A) WPP 001/4 HAN 10,8 c
4. Edition

En

PE 6 A 100 D 320 RS 3022 EP/RSV 350-1100 A4 B 1070R (1) supersedes 12.78
350-1100 A8 B 1070R (2) company MF-Hanomag
engine D 963 A2

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,80-190 (1,75-1,95) mm (from BDC) Difference between CRT9 + 21 5,5-6,5°

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	10,5 - 11,1	0,5			
	6	3,4 - 4,6				
	12	15,6 - 17,0				
200	9	7,2 - 8,4				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

A4 ... (1)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.70	1100	16,0	without auxiliary spring	ca.30	350	7,4		
	1140	12,2					1100	0
	1170	7,8			100	19-21		
	1150	9,2-11,6			350	7,6-8,2	350	0,2-0,8
(2a)	1250	1,2- 4,1	with auxiliary spring		500	2,5-5,0		
	1320	0,3- 1,5			560	0 -1,5		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(1) 1100	150,0-152,0 (148,0-154,0)	1130-1140*			100	19-21mmRW		

./.

Checking values in brackets

* 1 mm less control rod travel than col 2

4.79

F5

F5

The numbers denote the sequence of the tests

B. Governor Settings

A8 ... (2)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.24	350	5,5	600	11,5-11,6
	x	5,5					100	min. 19	400	12,7-13,3
							350	5,9-6,1		
ca.56	10,5	1140-1150					485-545	= 2,0		
(2a)	4,0	1190-1220					600	0-1		
	1360	0,3 - 1,7								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(2) 1100	150,0-152,0 (148,0-154,0)	1140-1150*			100	19-21mmRW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting: Gauge pressure = bar	Measurement: Gauge pressure = bar	Control rod travel-diminution difference: mm (1)

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

F6

FG.

Test Specifications Fuel Injection Pumps and Governors (1A)

VDT-WPP 001/4
2. Edition
En

PES 6 A 100 D 420 LS3007 EP/RSV .. 569DR, 696DR, 724 DR
LS3024 EP/RSV .. 696DR, 724DR

supersedes 12.74
company Case
engine A 504 BDT
A 504 BDT1

Test with case overflow valve!
Governors 569 and 724 in accordance with special setting!

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	9,1 - 9,8	0,5			
	6	3,6 - 4,8				
	12	13,6 -14,9				
200	9	5,2 - 6,8				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

696 DR

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 . 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca.58	885	13,6		ca.30	375	8,0		
	930	6,8	without auxiliary spring				875	0
	960	1,8			100	19-21		
					375	7,7-8,3	350	0,2-0,8
	930	6,3-8,0			450	2,0-4,7		
(2a)	960	2,5-5,3	with auxiliary spring		550			
	1030	0,3-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5), Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
875	146,5 - 149,5	880-895	900	101,0-131,0	100	131,0-141,0	375	16,5-22,5
			940	12,5-20,5				./.

Checking values in brackets

* 1 mm less control rod travel than col 2

5.77

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

F7

The numbers denote the sequence of the tests

B. Governor Settings

724DR

(1) Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	(4) Control-lever deflection in degrees (7)	Lower rated speed rev/min (8)	Lower rated speed: Control rod travel mm (9)	(3) Torque control rev/min (10)	(3) Torque control: Control rod travel mm (11)
ca.42	1120 1180 1210	12,8 6,3 2,5	without auxiliary spring	ca.20	375	6,0	1100	0
					150	18-21		
					375	5,7-6,3		
	1140 1200 1280	12,6-13,3 4,8- 6,5 0,3- 1,0	with au... ...ring		450 550	1,9-3,8 0 - 1	500	0,1-0,4
(2a)								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	(6) Rotational-speed limitat. Note: changed to ...) rev/min (3)	(3a) Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle (5): rev/min (6)	cm³/1000 strokes (7)	(4a) Idle stop: rev/min (8)	Control rod travel mm (9)
1100	152,5-155,5	1140-1155	700 600	156,0-160,0 max. 159,0	100	131,0-141,0	375	16,5-22,5
			1225	12,5- 20,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever (1)	Control rod travel mm (2)	Control rod travel mm rev/min (3)	Intermediate rated speed (4) (5) (6)	(4) Control-lever deflection in degrees (7)	Lower rated speed rev/min (8)	Lower rated speed: Control rod travel mm (9)	(3) Torque control rev/min (10)	(3) Torque control: Control rod travel mm (11)
ca.41	1120 1150 1180	9,3 6,0 3,2	without auxiliary spring	ca.19	375	5,7		
					150	19,0-21,0	1100	0
					375	5,4- 6,0		
	1140 1200 1260	9,0-9,8 2,8-4,0 0,3-1,0	with auxiliary spring		450 550	1,6-3,5 0 -1,0	500	0,1-0,4
(2a)								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min (1)	cm³/1000 strokes (2)	(6) Rotational-speed limitat. Note: changed to ...) rev/min (3)	(3a) Fuel delivery characteristics: rev/min (4)	cm³/1000 strokes (5)	Starting fuel delivery Idle (5): rev/min (6)	cm³/1000 strokes (7)	(4a) Idle stop: rev/min (8)	Control rod travel mm (9)
1080	91,0- 93,0	1110-1125	800 700	91,5-94,5 max. 94,5	100	131,0-141,0	375	16,5-22,5
			1200	14,5-22,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

F8

F8

En

Notes on special setting	Test sequence
Run pump at 100 min-1 below rated speed and vent damper. (With version 2 at vent screw, with versions 1 and 3 by loosening damper bushing. Then tighten damper bushing again and with version 2 ensure that centre-punch mark on screw plug faces upwards). Switch off test bench.	
Set projection of injected-quantity stop with respect to stop plate (dimension "a").	
Set idle before full-load speed regulation!	
Set idle stop screw (dimension "c"). Screw back stop screw of injected-quantity lever. Limit travel of stop pin (dimension "b") using for example feeler gauge EFEP 429-1 687 970 019 and place injected-quantity lever in position with fitted cylindrical helical coiled spring.	
Set idle delivery at speed-regulating throttle. Then place speed-control lever in position such that it makes contact with idle stop. (In doing so, do not turn speed-regulating throttle, but rather, if necessary, adjust speed-control lever after loosening clamping screw at bracket).	(a)
Set low-idle speed regulation. Position stop screw of injected-quantity lever at lugs of speed-control lever. Remove fixing element for dimension "b".	(b)
Test starting fuel delivery.	(c)
Set speed regulation at maximum-speed stop screw.	(d)
Set full-load delivery. Correct by adjusting injected-quantity stop. If full-load delivery has been altered, check (a), (b) and (d) again.	(e)
Tests as per Section B.	(f)
Test deliveries as per Section C.	(g)
Perform check measurement. To do so, limit dimension "b" again (see above) and place injected-quantity lever in position with fitted cylindrical helical coiled spring. If necessary, correct quantity within tolerance of dimension "b". Then position speed-control lever at idle stop screw and, if necessary, adjust stop screw of injected-quantity lever. Remove fixing element for dimension "b".	(h)
Perform stop check.	(i)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4
1. Edition

En

PES 6 A 100 D 410 RS3025Z EP/RSV 400-1100 A2B765DL
RS 3025 EP/RSV 400-1100 A2B766DL
RS 3025 EP/RSV 400-1100 A7B767 L

supersedes -
company John Deere
engine 6404 A

Test-pressure line 6 x 2 x 600 Inlet pressure 1.5 bar
Manifold-pressure compensator (LDA) adjustment page 3!
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0+0,1(+0,15 / - 0,05) mm (from BDC)

Port closing mark 14 ° after port closing.

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,6 - 8,3	0,5			
	6	3,2 - 4,2				
	12	12,2 -13,5				
200	9	4,0 - 5,2				

Adjust the fuel delivery from each outlet according to the values in ☐

400-1100 A2B765DL mit 3025Z

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.43	1060	16,0	without auxiliary spring	ca.21	400	6,3	1100	0
	1145	9,5			200	19 - 21		
	1200	4,5			400	6,0-6,6	500	0,4-0,7
	1100	ca.10,5			450	3,7-4,8		
(2a)	1200	ca. 4,5			560	0 - 1		
	1250	0,3-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,8 bar		LDA	0,8 bar				
1100	107,5-109,5	1140-1150*	750	118,5-121,5	100	156,0-176,0	400	6,3
		(1135-1155)						
			LDA	0 bar	400	11,5-15,5		
			550	53,0-59,0	1200	20,5-26,5		
(inrease by : 2,0 cm³!)								

Checking values in brackets

* 1 mm less control rod travel than col 2

9.76

F10

The numbers denote the sequence of the tests

400-1100 A2B766DL

B. Governor Settings

(1) Degree of deflection of control lever	Upper rated speed rev/min: Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Control-lever deflection in degrees	Lower rated speed rev/min	Control rod travel mm	(3) Torque control rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.43	1060	16,0				ca.21	400		1100	0
	1145	9,3	without auxiliary spring				200	19 - 21		
	1200	4,3					400	6,0-6,6	500	1,7-1,9
	1100	ca.10,4					500	0,4-3,2		
(2a)	1200	ca. 4,3	with auxiliary spring				580	0 - 1		
	1270	0,3-1,0								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ...) rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery Idle (5): rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA	0,8 bar		LDA	0,8 bar				
1100	107,0-109,0	1140-1150*	500	122,5-125,5	100	156,0-176,0	400	6,3
		(1135-1155)			400	11,5-15,5		
					1200	18,5-28,5		
	(inrease by · 2,0 cm³!)							

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(1) Degree of deflection of control lever	Upper rated speed rev/min: Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Control-lever deflection in degrees	Lower rated speed rev/min	Control rod travel mm	(3) Torque control rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.72	1070	16,0				ca.30	400	6,3		
	1100	11,6	without auxiliary spring				150	19 - 21		
	1150	4,2					400	6,0-6,6		
	1080	ca. 10,6					450	1,7-3,7		
(2a)	1120	7,0- 9,6	with auxiliary spring				500	0 - 1		
	1180	0,3- 1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ...) rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery Idle (5): rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1080	112.0-114,0	1110-1120*			100	156,0-176,0	400	6,3
		(1105-1125)			400	11,5-15,5		
					1150	11,5-21,5		
	(inrease by 2,0 cm³)							

Checking values in brackets

* 1 mm less control rod travel than col. 2

F11

En

F11

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / ~~increasing~~ pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
3025Z with 765DL	0,62	0,11	-0,1-0,2 -3,0-3,3
3025 with 766DL	0,55	0,11	-0,1-0,2 -2,6-2,8
3025 with 767 L	without	L D A	- - - -
Switching point (hydr. measurement)	max. 0,76	mind. 0,48	10 - 11 mm RW 19 - 21 mm RW

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Preliminary adjustment, dimension H = 21,8 mm

Test Specifications Fuel Injection Pumps and Governors

(1A) WPP 001/4
1. Edition
En

PES6A100D 420LS3024 RSV375-1100A2B763DR

supersedes –
company case
engine A504 BDTI

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	9,2 - 9,8	0,6			
	6	3,8 - 4,8				
	12	13,9 - 14,9				
200	6	0,5 - 1,5				
	9	5,4 - 6,8				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 . 5 6 .	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
ca.43	1100	10,8		ca.22	375	6,0	1100	0
	1160	7,3	without auxiliary spring					
	1220	1,2			150	19-21	500	0,1-0,4
	1140	ca. 10,8			375	5,7-6,3		
(2a)	1200	4,7- 6,0	with auxiliary spring		450	2,7-4,1		
	1280	0,3- 1,0			560	0-1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note changed to) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1100	158,0 - 160,0 (157,0 - 161,0)	1140-1150*	700	161,0-165,0 (158,5-167,5)	100	133-139	375	17,5-21,5
			600	max. 164,0				
			1225	13,5- 19,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

1.80

F13

F13

Test Specifications Fuel injection Pumps (1) and Governors

40

WPP 001/4 KHD 1 n 7

1. Edition

En

PE 8 A 95 D 410 LS 2451 RQV 1150 AB 1041 L

supersedes –

company: KHD

engine. F 8 L 413 F

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,0+0,1	8,7 - 8,9	0,3(0,6)			
300	5,9-6,1	0,9 - 1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
-	9,0	1150-1155	-	-	-	-	-	-		
	4,5	1185-1195								
	1250	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characte. istics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	85,5-87,5 (83,5-89,5)	-	-	-	100	119,0-129,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

F14

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.
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9.81

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 IHC 7,6b
2. Edition
En

PES 6 MW 100/320 RS 1504
RSV 350 ... 1200 MW 2/306 R

supersedes
company IHC
engine DT 466

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) 10,5 mm RW

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	$7,4^{+0,2}$	6,5-6,7	0,3(0,5)			
350	5,7-5,9	1,8-2,2	0,3(0,5)			
1000			0,3(0,5)			
800			0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 = 0,3-1,0					ca.32	350	5,8	1100	7,5-7,7
							100	min.19	1000	8,1-8,3
ca.60 (2a)	1250-1260=6,5 1310-1340=3,1 1450= 0,3 - 1,7						350 430-490	5,7-5,9 = 2,0	800 500	8,6-8,8 8,7-8,9

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1200	65,0-67,0 (64,0-68,0)	1250-1260*	1000	72,0-74,0 (71,0-75,0)	100 350	min. 140 18,0-22,0 (17,0-23,0)	350	5,8
			800	78,0-80,0 (77,0-81,0)	325	24,0-36,0 (23,0-37,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

3.80

EMS

Test Specifications Fuel Injection Pumps and Governors

(1A) WPP 001/4 IHC 7,6a
2. Edition

En

PES 6 MW 100/320 RS 1504
RSV 350 ... 1250 MW 2/305 R

supersedes
company IHC
engine DT 466

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,35) mm (from BDC) 10,5 mm RW

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	$7,3^{+0,2}$		0,3(0,5)			
350	5,5-5,7	1,8-2,2	0,3(0,5)			
1000			0,3(0,5)			
800			0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.32	350	5,6	1100	7,3-7,9
							100	min.19	1000	7,8-8,0
ca.60 (2a)	1300-1310=6,4 1360-1390=3,1 1450=0,3 =1,7						350 430-490	5,5-5,7 = 2,0	800 500	8,5-8,7 8,6-8,8

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1250	69,0-71,0 (68,0-72,0)	1300-1310*	1000	76,0-78,0 (75,0-79,0)	100	min.140	350	5,6
				82,5-84,5	350	18,0-22,0 (17,0-23,0)		
			800	(81,5-85,5)	1375	25,0-37,0 (24,0-38,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

3.80

F16

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3d
1. Edition
En

PE 6 MW 90/720 RS 6 RWV 300-1200 MW 8
0 403 346 002

supersedes
company DAF
engine DH 825
151 PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) 10,5 Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (compensating valve) mm 6
1000	9,4+0,2	7,2-7,4	0,35(0,6)			
300	5,7-6,1	0,8-1,2	0,35(0,55)			
800	9,6+9,8		0,5 (0,7)			

Set uniform delivery according to the values in [ ]

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Lower rated speed: Degree of deflection of control lever 1	Control rod travel mm 2	Rotational speed rev/min 3	Upper rated speed: Degree of deflection of control lever 4	Control rod travel mm 5	Rotational speed rev/min 6	Variations in control rod travel: 7	Rotational speed rev/min 8	Control rod travel mm 9
26 (1)	min. 10,0	150-200	82 (7)	8,5	1240-1250	(12)	100	20,5-21,5
(2)	5,7	280-320	(8)	4,3	1260-1320	(13)	1200	9,1- 9,5
(3)	with contact	320	(9)	0	1320-1380	(14)	1000	9,4- 9,8
(4)			(10)					
(5)	0	450-550	(11)			(6)	Switching point 230-250 (200-260)	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19) Test oil temp 40°C (104°F) rev/min 1	cm³/1000 strokes 2	Full-load speed regulation (8a) rev/min 3	Variations in fuel delivery (17) (18) rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle rev/min 6	cm³/1000 strokes 7	Difference cm³/1000 strokes 8
1000	72,9-74,9 (70,9-76,9)	1240-1250 (1235-1255)	800	72,3-76,3 (70,3-78,3)	100	min. 220	(12a)
					300	8,8-12,8 (6,3-15,3)	(15)
							(16)

Checking values in brackets

less control rod travel than in Column 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 u
6. Edition
En

PES 6 A 90 D 410 RS 2569 RQV 300-1400 AB 1065 DL (1)
RQV 300-1400 AB 1077 DL (2)

supersedes 10.80
company: Daimler-Benz
engine: OM 352
96 kW (130 PS)

Set the stop screw to control-rod travel 3 - 3,5 mm.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35 (2,20-2,40) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,1+0,1	5,9-6,0	0,3(0,45)			
300	8,4-8,6	1,0-1,6	0,2(0,4)			
500	11,3+0,1	C, Sp.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1500	15,2-17,8	-	-	-	ca.21	100	min.10,0	300	1,1
	1630	0 - 1,0					300	8,4-8,6	670	3,9-4,1
ca.65	9,1	1440-1450					550-610	= 2,0	1450	8,0
	4,0	1530-1560				(3a)				

Torque control travel a = 1,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm +0,1 9
1400	59,5-60,5 (57,5-62,5)	1440-1450*	500	51,5-54,5 (49,5-56,5)	100	72,25-82,25	1400	10,1
						14,4 - 15,0 mm RW	1000	10,6
							630	11,1
					100-	220 (80-240)	500	11,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.81

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
ca.68	1400 1700	15,2-17,8 0 - 1		-	-	-	ca.12	100 300 540-600 700	min.7,1 5,5-5,7 =2,0 0 - 1	300 800 1400	1,1-1,4 4,3-4,6 8,1
ca.60	9,7 4,0	1440-1450 1550-1580					(3a)				

Torque control travel a 0,35 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1440	61,5-62,5 (59,5-64,5)	1440-1450*	1000	59,5-61,5 (57,5-63,5)	100	12,2-12,8	400 920 755	10,6 10,8 10,9
		705-720 (ZDA)**	500	53,0-56,0 (51,0-58,0)			500	10,9

Checking values in brackets

* 1 mm less control rod travel than col 2

** intermediate speed stop

B. Governor Settings

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
							(3a)				

Torque control travel a mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

PES 4 M 55 C 320 RS 60 EP/MN 60 M 44 DR
EP/MN 60 M 50 DR

supersedes 10.75
company: Daimler-Benz
engine: OM 615

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) max. RW

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	13,2 (+0,1)	3,5 - 3,7	0,2(0,25)			
250 1600 1000	9,1 (±0,1) Sect.C,	0,4 - 1,0 col.4-6	0,15(0,2) 0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w.c. 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w.c. 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
1,1±0,1	500-480	10	470	13,2	510	7,7-13,2	550	10,0-10,8	200	14,3-14,4
					550	2,2- 9,3	650	9,1-10,0	300	14,0-14,3
			490-	510*					400	13,4-13,7
									470	13,2-13,3

control rod travel test (cols. 4–11)
= rotational speed 500 rev/min
adjust breakaway (cols. 4–5) by means of shims*
cam adjustment (B 8–9 – C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F): rev/min 1	Vacuum mm wat. col 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	Idle (stop)** Idle (imbalance): rev/min 7	Vacuum mm wat. col.	Control road travel from full-load to idle mm cm³/1000 strokes 8
2250	470	35,7-36,7 (34,7-37,7)	1600	325	36,5-37,9 (35,5-38,9)	500	525	2,2 - 3,2
			1000	135	34,2-35,7 (33,2-36,7)	250	760	4,5 -10,5

Checking values in brackets

11.76

PES 4 M 55 C 320 RS 60 EP/MN 60 M 48 D

supersedes –
company: Daimler-Benz
engine: OM 615
(Sweden)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) max. RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	12,9 (+0,1)	3,4 - 3,6	0,2(0,25)			
250	9,1 (±0,1)	0,4 - 1,0	0,15(0,2)			
1600 1000	Sect.C,	col.4-6	0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col. 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mmw.c 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mmw.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mmw.c. 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mmw.c. 10	Torque control: Control rod travel mm 11
0,8+0,1	500-480	10	470	12,9	510	7,8-13,0	550	9,7-10,7	150	13,8-13,9
					550	2,2- 9,0	700	8,6- 9,6	350	13,3-13,7
			490	- 510*					470	12,9-13,0

control rod travel test (cols. 4–11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw, Test oil temp 40°C (104°F): rev/min 1	Vacuum mm wat. col 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat. col	Control road travel from full-load to idle: mm cm³/1000 strokes 8
2250	470	34,7 - 35,7 (33,7 - 36,7)	1600	325	35,2 - 36,7 (34,2 - 37,7)	500	525	2,2-3,2
			1000	135	31,7 - 33,2 (30,7 - 34,2)	250	ca.760	4,5-10,5

Checking values in brackets

F21

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 MB 2,4 a

4. Edition

PES 4 M 55 C 320 RS 47 A EP/MN 60 M 38 DR (1)
RS 47 ..M 39 DR, 42 DR, 43 DR (1)
RS 47 ..M 40 DR (2)

supersedes 6.75
company Daimler-Benz
engine OM 616 (65 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8 mm (from BDC) max. RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
1000	12	2,1 - 2,6	0,3			
	9	1,1 - 1,7				
	18	4,1 - 4,9				
200	9	0,5 - 1,0				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

38DR, 39DR, 42DR, 43DR (1)

Torque control travel mm 1	Leakage Vacuum pressure drop mm water col. 2	Leakage Time at least s 3	Control-rod travel limitation breakaway* Vacuum mm w.c. 4	Control-rod travel limitation breakaway* Control rod travel mm 5	Control rod travel test Vacuum mm w.c. 6	Control rod travel test Control rod travel mm 7	Auxiliary spring auxiliary cam** Vacuum mm w.c. 8	Auxiliary spring auxiliary cam** Control rod travel mm 9	Torque control Vacuum mm w.c. 10	Torque control Control rod travel mm 11
1,1+0,1	500-480	10	550	14,8	580	10,5-14,8	675	10,2-11,2	150	15,9-16,0
			550-580		615	7,8-11,8	850	8,8- 9,8	250	15,5-15,9
									350	15,0-15,4

control rod travel test (cols 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F) rev/min 1	Vacuum mm wat. col 2	cm³/1000 strokes 3	Fuel delivery characteristics rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance) rev/min 7	Vacuum mm wat. col	Control road travel from full-load to idle mm cm³/1000 strokes 8
(1) 2250	520	39,7 - 40,7 (39,2 - 41,2)	1600	360	38,7 - 40,7 (38,2 - 41,2)	250	ca. 840	4,5 - 10,5 dispersion max. 1,5
			1000	140	38,2 - 39,7 (37,7 - 40,2)			

Checking values in brackets

11.81

f22

B. Governor Settings

40 DR

Torque control travel	Leakage: Vacuum pressure drop	Leakage: Time at least	Control-rod travel limitation breakaway*: Vacuum	Control-rod travel limitation breakaway*: Control rod travel	Control rod travel test: Vacuum	Control rod travel test: Control rod travel	Auxiliary spring auxiliary cam**: Vacuum	Auxiliary spring auxiliary cam**: Control rod travel	Torque control: Vacuum	Torque control: Control rod travel
mm	mm water col.	s	mm w.c.	mm	mm w.c.	mm	mm w.c.	mm	mm w.c.	mm
1	2	3	4	5	6	7	8	9	10	11
1,1+0,1	500-480	10	550	14,3	580	9,5-14,3	675	9,7-10,8	150	15,3-15,4
			550-580		615	6,7-11,3	850	8,3- 9,4	250	14,9-15,4
									350	14,4-14,8

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw, Test oil temp. 40°C (104°F): rev/min	Vacuum mm wat. col	cm^3/1000 strokes	Fuel delivery characteristics: rev/min	Vacuum mm wat. col	cm^3/1000 strokes	idle (stop)** idle (imbalance): rev/min	Vacuum mm wat. col:	Control road travel from full-load to idle mm cm^3/1000 strokes
1	2	3	4	5	6	7		8
(2) 2250	520	38,7-39,7 (38,2-40,2)	1600	360	37,9-39,5 (37,4-40,0)	250	ca. 840	4,5-10,5 dispersion max. 1,5
			1000	140	37,2-38,7 (36,7-39,2)			

Checking values in brackets

B. Governor Settings

Torque control travel	Leakage: Vacuum pressure drop	Leakage: Time at least	Control-rod travel limitation breakaway*: Vacuum	Control-rod travel limitation breakaway*: Control rod travel	Control rod travel test: Vacuum	Control rod travel test: Control rod travel	Auxiliary spring auxiliary cam**: Vacuum	Auxiliary spring auxiliary cam**: Control rod travel	Torque control: Vacuum	Torque control: Control rod travel
mm	mm water col	s	mm w.c	mm	mm w.c.	mm	mm w.c.	mm	mm w.c.	mm
1	2	3	4	5	6	7	8	9	10	11

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw, Test oil temp. 40°C (104°F): rev/min	Vacuum mm wat. col.	cm^3/1000 strokes	Fuel delivery characteristics: rev/min	Vacuum mm wat. col.	cm^3/1000 strokes	idle (stop)** idle (imbalance): rev/min	Vacuum mm wat. col.	Control road travel from full-load to idle mm cm^3/1000 strokes
1	2	3	4	5	6	7		8

Checking values in brackets

** Adjustment of idle stop:

At n = 500 and with the governor stop cam out of engagement, bring the control rod into full-load position by increasing the column of water to 520 mm and measure the control-rod travel obtained. Increase column of water further until the control rod has adjusted to 4.5 mm less control-rod travel - than in full-load position and measured at 520 mm column of water. In this position, slowly force the stop cam up to the end position and observe control rod.

If the spring retainer is correctly adjusted, the control rod must adjust to a control-rod travel 3.7 $\pm$ 0.5 mm less - than in full-load position measured at 520 mm column of water. If the setting is lower or higher, then the position of the spring bolt in the spring retainer must be changed by inserting appropriate shims.

PES 4 M 50 C 320 RS14 EP/MN 60 M 31 DR
RS14Z EP/MN 60 M 31 DR ./.

supersedes 3.76
company: Daimler-Benz
engine OM 615

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) max. RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	13,3	3,4 - 3,5	0,2(0,25)	13,2	3,2 - 3,4	
250	(+0,1) 9,1 (+0,1	0,4 - 1,0	0,15(0,2)	(+0,1) 9,1 (+0,1)	0,4 - 1,0	
1600/1000	Sect.C, col.4-6		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

31 DR with S14

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col. 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w.c. 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w.c. 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
1,0+0,1	500-480	10	490	13,3	530	9,5-13,3	600	10,0-11,0	150	14,2-14,3
					600	2,0- 7,5	700	9,2-10,2	300	13,9-14,2
									400	13,3-13,7
			510	- 530 *					490	13,3-13,4

control rod travel test (cols. 4–11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4–5) by means of shims*
cam adjustment (B 8–9 – C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F): rev/min 1	Vacuum mm wat. col 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat. col	Control road travel from full-load to idle: mm cm³/1000 strokes 8
2250	490	34,2 - 35,2 (33,3 - 36,2)	1600	350	31,9 - 33,4 (30,9 - 34,4)	500	530	2,0-3,0
			1000	125	31,9 - 33,4 (30,9 - 34,4)	250	ca.800	4,5-10,0
								./.

Checking values in brackets

4.77

G1

B. Governor Settings

31D with S14Z MB 2,0 b

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col. 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w.c. 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w.c. 8	Auxiliary spring auxiliary cam**: Control rod travel mm + *** 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
1,0+0,1	500-480	10	490	13,2 515 - 535*	535 600	8,7-13,2 1,5- 7,7	600 700	9,8-10,8 9,0-10,0	150 300 400 490	14,1-14,2 13,8-14,2 13,3-13,7 13,2-13,3

control rod travel test (cols. 4–11)
= rotational speed 500 rev/min
adjust breakaway (cols. 4–5) by means of shims*
cam adjustment (B 8–9 – C 7-8) by means of shims**

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw, Test oil temp. 40°C (104°F): rev/min 1	Vacuum mm wat. col. 2	cm^3/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col. 5	cm^3/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat. col.	Control road travel from full-load to idle mm cm^3/1000 strokes 8
2250	490	32,7-33,7 (31,7-34,7)	1600	350	31,2-32,7 (30,2-33,7)	500	550	2,0-3,0
			1000	125	31,2-32,7 (30,2-33,7)	250	ca.800	4,5-10,5

Checking values in brackets

B. Governor Settings

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col. 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w.c. 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w.c. 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11

control rod travel test (cols. 4–11)
= rotational speed 500 rev/min
adjust breakaway (cols. 4–5) by means of shims*
cam adjustment (B 8–9 – C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw, Test oil temp. 40°C (104°F): rev/min 1	Vacuum mm wat. col. 2	cm^3/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col. 5	cm^3/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat. col.	Control road travel from full-load to idle mm cm^3/1000 strokes 8

Checking values in brackets

G2

En
G2

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 EIC 3,9c
3. Edition
En

PES 4 A 80 D 420 RS 1278 RSV 300-1000 A 1 B 643 DR

supersedes 4.80
company Eicher
engine EDK 4-10 Turbo
55 kW (75 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) 2,15-2,25 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
980	$10,7^{+0,1}$	6,7 - 6,8	0,2(0,35)			
300	7,4-7,6	1,1 - 1,5	0,2(0,3)			
500	- C, col.4-5		0,3(0,4)			

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Control lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11 +0,1
loose	800 0,3-1,0		-	-	-	ca.29	300	5,5	980	10,7
	x = 5,5						100	min.19,0	450	10,7
ca.57	1020-1030 = 9,7						300	5,9 -6,1		
(2a)	1055-1085 = 4,0						500	max. 1,0		
	1230= 0,3 - 1,7						370-430	- 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
980	68,0 - 69,0 (66,4 - 70,5)	1020-1030*	500	60,0 - 62,0 (58,5 - 63,5)	100	16,5-17,1 mm RW	300	6,0

Checking values in brackets

* 1 mm less control rod travel than col 2

12.81

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

G3

63

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 2,2 h

1. Edition

En

PES 4 M 70 C 320 RS 50 EP/RSV 350-2200 MOB 329 DR

supersedes –

company Daimler-Benz

engine OM 615/WK

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC) RW max.

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,0+0,1	3,1 - 3,4	0,3			
	9,0- 9,1	2,2 - 2,8				
	15,0-15,1	3,8 - 4,4				
	9,0- 9,1	0,4 - 1,0				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca.66°	2200 16,0					ca.22	350	8,0	2200	0
	2300 11,5		without auxiliary spring						1900	0
	2400 5,6						100	20,5-21,0	400	1,1-1,3
	2300	10,2-12,0					350	7,7- 8,3		
(2a)	2400	3,6-7,0	with auxiliary spring				550	2,2- 5,2		
	2470	0 -1,0					770	0 - 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery (5) Idle		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
2180	37,0-38,0		-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

11.81

G4

G4

Test Specifications Fuel Injection Pumps and Governors

1A

WPP 001/4 MB 2,4n
1. Edition
En

PES 4 M 55 C 320 RS 49 RSV 400...2100 MOB349

supersedes -
company Daimler-Benz
engine OM 616

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
2080	14,4-14,5	3,95 - 4,05	0,2(0,25)			
400	7,3- 7,5	7,9 - 13,9	0,2(0,25)			

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 X = 4,0					ca.20	400	6,9	2080	14,4+0,1
							400	7,3-7,5	1550	15,0+0,2
ca.62 (2a)	2140-2150=13,4 2260-2280) 4,0 2470 = 0,3-1,7						820 -	880=2,0	450	15,4+0,1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp 40°C (104°F)		(6) Rotational-speed limitat Note changed to)	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
2080	39,7 - 40,7 (38,7 - 41,7)				100	RW (mm) 19,0-21,0		
					Low idle speed			
					400	7,5 -13,5 RW (mm) 7,3-7,5		

Checking values in brackets

* 1 mm less control rod travel than col 2

6.81

G5

G5

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 2,2 e
4. Edition

En

PES 4 M 55 C 320 RS 49 EP/RSV 350-1600 M2 B 331 R
RS 49 EP/RSV 350-1650 M2 B 344 DR ./.
RS 49,Z EP/RSV 675-1250 M1 B 345 R ./.

supersedes 5.7
company Daimler-Benz
engine OM 615
OM 616 - 2,4 -49Z

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC) max. RW

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	2,7 - 2,9	0,3			
	9	1,6 - 2,0				
200	9	0,9 - 1,3				

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

..331R

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 . 5 6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.72	1600	16,0		ca.28	350	8,0	1580	0
	1700	9,8	without auxiliary spring		150	19-21		
	1750	6,0			350	7,7-8,3	600	0
	1700	8,5-10,9			500	2,7-4,9		
(2a)	1800	3,0- 5,3	with auxiliary spring		740	0 - 1	400	1,2-1,8
	1960	0,3 - 1						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1580	34,7 - 35,7	1620			100	min. 20	350	7,5-11,5
						dispersion		.max.2)
(inrease by · 0,5 cm³!)								./.

Checking values in brackets

* 1 mm less control rod travel than col 2

10.77

G6

The numbers denote the sequence of the tests

..344DR

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Control-lever deflection in degrees	Lower rated speed rev/min	Lower rated speed: Control rod travel mm	(3) Torque control rev/min	(3) Torque control: Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.69	1630	16,0	without auxiliary spring			ca.24	350	8,0	1630	0
	1680	11,7					200	20,5-21,0		
	1720	8,0					350	7,7- 8,3	500	0,5-0,7
							500	2,9- 4,3		
(2a)	1630	ca. 13,8	with auxiliary spring				680	0 - 1		
	1730	ca. 7,0								
	1860	0,3 -1,0								

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ...) rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery Idle (5): rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1630	36,7-37,7	1665-1675*	1500	36,2 - 38,2	100	min. 20	350	7,5-11,5
			1250	35,7 - 37,7		dispersion		max.2)
			1725-	1740 = 7,0 mm RW				
(inrease by · 0,5 cm³!)								

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Control-lever deflection in degrees	Lower rated speed rev/min	Lower rated speed: Control rod travel mm	(3) Torque control rev/min	(3) Torque control: Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.59	1240	16,0				ca.32	675	7,5	-	-
	1260	12,6	without auxiliary spring				200	20,5-21,0		
	1280	8,6					675	7,2- 7,8		
							730	2,4- 5,0		
(2a)	1240	ca. 14,4	with auxiliary spring				820	0 - 1		
	1300	ca. 6,5								
	1400	0,3- 1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ...) rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery Idle (5): rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1230 "Z"	35,2-36,2	1250-1270*			100	min.20	675	7,5
1230	39,7-40,7	1270-1280*						
			1300-	1315 = 6,5 mm RW				
(increase by ± 0,5 cm³!)								

Checking values in brackets

* 1 mm less control rod travel than col. 2

G7

G7 Ed

Test Specifications Fuel Injection Pumps and Governors

(1A) VDT-WPP 001/4 MB 2,4c
2. Edition

En

PES 4 M 55 C 320 RS 49 EP/RSV 400-2100 MO B 364 D (1)
RS 49 350-1650 M2 B 347 (2)
RS 49 Z 350-1650 M2 B 347 (3)
RS 49 400-2100 MO B 348D (4)

supersedes
company Daimler-Benz
engine OM 616
(1 - 65 PS)
(2 - 60 PS)
(3 - 55 PS)
(4 - L/O 309)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC) max. RW

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	2,1 - 2,6	0,3			
	9	1,1 - 1,7				
	15	3,1 - 3,8				
200	9	0,5 - 1,0				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

400 - 2100 MOB 346 D (1)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.59	2100	16,0	without auxiliary spring	ca.18	400	7,4	2080	0
	2200	10,6			250	20,5-21,0		
	2300	3,7			400	7,1- 7,7		
	2100	ca. 14,3	with auxiliary spring		480	1,8- 4,0	500	1,0-1,2
(2a)	2250	ca. 7,3			580	0 - 1		
	2400	0,3 -1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
2080	39,7 - 40,7	2150-2165*	1600	38,7 - 40,7	100	min.20 mm RW	400	7,5-11,5 dispersion max.1,5
			1000	38,2 - 40,2				
(increase by ± 0,5 cm³!)			2240-	2260 = 7,3 mm RW)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.75

G8

The numbers denote the sequence of the tests

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Control-lever deflection in degrees	Lower rated speed rev/min	Lower rated speed Control rod travel mm	(3) Torque control rev/min	Torque control Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.62	1660	16,0	without auxiliary spring			ca.18	350	8,5	-	-
	1700	12,4					200	20,5-21,0		
	1740	8,0					350	8,2- 8,8		
	1650	ca. 14,8	with auxiliary spring				500	2,9- 5,6		
(2a)	1740	ca. 7,8					680	0 - 1		
	1900	0,3 -1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ...) rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery idle (5): rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(2) 1650	39,2 - 40,2	1665-1675*	1735	- 1750= 7,8 mm RW	100	min.20mm RW	350 dispersion max.	7,5-11,5
(3-Z) 1650	37,7 - 38,7	1665-1675*	1735	- 1755 6,4 mm RW			1,5	
(increase by ± 0,5 cm³!)								

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min	Intermediate rated speed			(4) Control-lever deflection in degrees	Lower rated speed rev/min	Lower rated speed Control rod travel mm	(3) Torque control rev/min	Torque control Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.59	2100	16,0	without auxiliary spring			ca.18	400	7,4	2080	0
	2200	10,6					250	20,5-21,0		
	2300	3,7					400	7,1- 7,7		
	2100	ca. 14,3	with auxiliary spring				480	1,8- 4,0	500	1,0-1,2
(2a)	2250	ca. 7,3					580	0 - 1		
	2400	0,3 -1,0								

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min	cm³/1000 strokes	(6) Rotational-speed limitat. Note: changed to ...) rev/min	(3a) Fuel delivery characteristics: rev/min	cm³/1000 strokes	Starting fuel delivery idle (5): rev/min	cm³/1000 strokes	(4a) Idle stop: rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
(4) 2080	39,7-40,7	2150-2165*	1600	38,7-40,7	100	min.20mmRW	400 dispersion max.	7,5-11,5
			1000	38,2-40,2				1,5)
(increase by ± 0,5 cm³!)			2240	-2260: 7,3 mm RW				

Checking values in brackets

* 1 mm less control rod travel than col. 2

G9

59

En

Test Specifications Fuel Injection Pumps ② and Governors

FIA 13,8 a 4
1. Edition
En

PE 6 P 120 A 720 RS 167 Z RQV 225/1100 PA 118 R

supersedes
company: Fiat
engine: 221 A
210 kW (286 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 - 2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,3+0,1	17,5-17,9	0,5(0,9)			
225	7,5-7,7	1,7- 2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	15,6-16,4	550	16,0	9,3	1145-1160	225	7,6	100	min.7,5	1100	10,3-10,4
								225	7,5-7,7	550	10,3-10,5
				4,0	1185-1215						
1300	0- 1,0							365	-405=2,0		

Torque-control travel
with flyweight assembly dimension a = mm
Speed regulation: At 1145-1160 min.⁻¹
1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1100	175,0-179,0 (172,0-182,0)				100	min. 15mm RW

Checking values in brackets

2.81

G10

610

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MWM 8,8 a
2. Edition

En

PE 6 A 100 D 320 RS 3008 EP/RSV 300-1150 A1B489DR
PE 8 A 100 .. RS 3009 EP/RSV 300-1150 A1B489DR
RQV 300/550-750AB660R, 871R

supersedes 12.68
company MWM
engine D/TD 232 - 6
D/TD 232 - 8

Instructions P. 3
All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,6 - 8,2	0,4			
	6	3,2 - 4,2				
	12	12,3 -13,4				
200	9	3,4 - 4,6				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

EP/RSV .. 489DR

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 . 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.66	1150	16,0	without auxiliary spring	ca.28	300	6,0	See note	
	1200	11,4			100	19 - 21		
	1250	5,8			300	5,7 - 6,3		
	1230	6,0-9,3			350	3,5 - 4,7		
(2a)	1280	1,8-4,0			400	0,6 - 3,0		
	1400	0,3- .1			500	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40° C (104° F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5), Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
See page 4-14								

Checking values in brackets

* 1 mm less control rod travel than col 2

7.77

GAA

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca.66	750	14,8-17,8	ca.34	520	13,7-15,5	ca.10	250	6,8-8,0		
	770	9,0-14,0		600	8,5-10,0		300	4,5-7,0		
	790	3,5-10,5		650	4,5- 7,0		350	3,6-4,0		
	800	0 - 8		720	0		550	1,8-4,0		
(5)	840	0					630	0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9
See page 4-14			(6a)		100	15,7-16,3 mm RW		
					300	5,3-5,7 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

B. Governor Settings

(1) Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
(5)										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat	(3a) Fuel delivery characteristics		Starting fuel delivery idle		(5a) Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min						Control rod travel mm
rev/min	cm^3/1000 strokes		rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

(1A)

Testoil-ISO 4113

G12

5.12.1

** Governor ..871R = electromagnetic starting fuel delivery unlocking (24 volt)
Switch on magnet for max. 15 sec. when testing.

The nameplate described at MWM 1.5 a has recently been extended to 2 speeds and 2 deliveries - in column n = (speed) and Q = (full-load delivery) for more accurate setting in the case of governors with torque control.

The following points apply, deviating from WPP 001/4, Supplement 1, setting the governor and the pump:

(2) Setting according to nameplate n = (speed 1) and Q = (delivery 1); or according to columns 1 and 2

(3) Is contacted until change of control-rod travel, as read under (2), or (with new nameplate) until the 2 delivery is reached at speed 2; or according to columns 4 and 5

(6) Is adjusted according to nameplate n = (speed 1 + 20 rpm) or column 3

For repairs on Fendt tractors on which the new nameplate (with 2 speeds and 2 deliveries) has not yet been introduced, the full-load data apply - ordered according to engine types -

according to the above note

In the case of new replacement pumps from Stuttgart warehouse there is no spring retainer. Send for from MWM according to old nameplate.

Cam sequence and angular spacing:

PE 6 A:
1 - 6 - 3 - 2 - 5 - 4
0 -90 -120-210-240-330°

PE 8 A:
1 - 8 - 5 - 4 - 7 - 2 - 3 - 6
0 -30 -90 -120-180-210-270-300°

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 165 PS / 2500 min^{-1}								
1250	81,0-83,0	1270	750	82,5-85,5				
B'162 PS / 2500 min^{-1}								
1250	81,0-83,0	1270	750	82,5-85,5				
B 162 PS / 2500 min^{-1}								
1250	81,0-83,0	1270						
F 160 PS / 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5-85,5				
B'155 PS / 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5-85,5				
B 155 PS / 2300 min^{-1}								
1150	80,0-82,0	1170						
A 141 PS / 2300 min^{-1}								
1185	76,0-78,0	1200						
B'144 PS / 2100 min^{-1}								
1050	77,0-79,0	1060	750	82,5-85,5				
B 144 PS / 2100 min^{-1}								
1050	77,0-79,0	1060						
A 131 PS / 2100 min^{-1}								
1080	73,0-75,0	1090						
F 144 PS / 2000 min^{-1}								
1000	77,0-79,0	1010	750	82,5-85,5				
B'138 PS / 2000 min^{-1}								
1000	77,0-79,0	1010	750	82,5-85,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

(1)

Testoil-ISO 4113

G14

En

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 138 PS / 2000 min^{-1}								
1000	77,0-79,0	1010						
A 126 PS / 2000 min^{-1}								
1030	73,0-75,0	1040						
B 127 PS / 1800 min^{-1}								
900	78,0-80,0	910						
A'115 PS / 1800 min^{-1}								
900	78,0-80,0	910						
A 115 PS / 1800 min^{-1}								
930	74,0-76,0	940						
B 108 PS / 1500 min^{-1}								
750	80,0-82,0	760						
A' 98 PS / 1500 min^{-1}								
750	80,0-82,0	760						
A 98 PS / 1500 min^{-1}								
775	76,0-78,0	785						
B 162 PS / 2300 min^{-1}								
1150	83,0-85,0	1170						
Special output								
D 143 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								
C 130 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
D 120 PS / 1500 min^{-1}								
750	90,0-92,0	760						
Emergency power output								
C 109 PS / 1500 min^{-1}								
750	90,0-92,0	760						
Emergency power output								

(1)

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 220 PS 2500 min^{-1}								
1250	81,0-83,0	1270	750	82,5-85,5				
B'216 PS 2500 min^{-1}								
1250	81,0-83,0	1270	750	82,5-85,5				
B 216 PS 2500 min^{-1}								
1250	81,0-83,0	1270						
F 213 PS 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5-85,5				
B'206 PS 2300 min^{-1}								
1150	80,0-82,0	1170	750	82,5-85,5				
B 206 PS 2300 min^{-1}								
1150	80,0-82,0	1170						
A 188 PS 2300 min^{-1}								
1185	76,0-78,0	1200						
B'192 PS 2100 min^{-1}								
1050	77,0-79,0	1060	750	82,5-85,5				
B 192 PS 2100 min^{-1}								
1050	77,0-79,0	1060						
A 175 PS 2100 min^{-1}								
1080	73,0-75,0	1090						
F 192 PS 2000 min^{-1}								
1030	77,0-79.0	1040	750	82,5-85,5				
B'184 PS 2000 min^{-1}								
1000	77,0-79,0	1010	750	82,5-85,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 184 PS / 2000 min^{-1}								
1000	77,0-79,0	1010						
A 168 PS / 2000 min^{-1}								
1000	73,0-75,0	1010						
B 169 PS / 1800 min^{-1}								
930	78,0-80,0	940						
A'154 PS / 1800 min^{-1}								
900	78,0-80,0	910						
A 154 PS / 1800 min^{-1}								
900	74,0-76,0	910						
B 144 PS / 1500 min^{-1}								
775	80,0-82,0	785						
A'130 PS / 1500 min^{-1}								
750	80,0-82,0	760						
A 130 PS / 1500 min^{-1}								
750	76,0-78,0	760						
B 216 PS / 2300 min^{-1}								
1150	83,0-85,0	1170						
Special output								
D 190 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								
C 173 PS / 1800 min^{-1}								
900	89,0-91,0	910						
Emergency power output								

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	

D 160 PS / 1500 min^{-1}

750 90,0-92,0 760
Emergency power output

C 145 PS / 1500 min^{-1}

750 90,0-92,0 760
Emergency power output

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 210 PS / 2300 min^{-1}								
1150	105,0-107,0	1170	800	104,5-107,5				
B'207 PS / 2300 min^{-1}								
1150	105,0-107,0	1170	800	104,5-107,5				
B 207 PS / 2300 min^{-1}								
1150	105,0-107,0	1170						
A 188 PS / 2300 min^{-1}								
1185	101,0-103,0	1200						
B'192 PS / 2100 min^{-1}								
1050	103,0-105,0	1060	800	104,5-107,5				
B 192 PS / 2100 min^{-1}								
1050	103,0-105,0	1060						
A 174 PS / 2100 min^{-1}								
1080	99,0-101,0	1090						
F 192 PS / 2000 min^{-1}								
1000	102,0-104,0	1010	800	104,5-107,5				
B'184 PS / 2000 min^{-1}								
1000	102,0-104,0	1010	800	104,5-107,5				
B 184 PS / 2000 min^{-1}								
1000	102,0-104,0	1010						
A 167 PS / 2000 min^{-1}								
1030	98,0-100,0	1040						
B 168 PS / 1800 min^{-1}								
900	101,0-103,0	910						

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

G20 En

620

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
A'153 PS / 1800 min^{-1}								
900	101,0-103,0	910						
A 153 PS / 1800 min^{-1}								
930	97,0-99,0	940						
B 142 PS / 1500 min^{-1}								
750	100,0-102,0	760						
A'129 PS / 1500 min^{-1}								
750	100,0-102,0	760						
A 129 PS / 1500 min^{-1}								
775	96,0-98,0	785						

(1)

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
F 292 PS / 2500 min^{-1}								
1250	102,0-104,0	1270	800	100,5-103,5				
B'292 PS / 2500 min^{-1}								
1250	102,0-104,0	1270	800	100,5-103,5				
B 292 PS / 2500 min^{-1}								
1250	102,0-104,0	1270						
F 280 PS / 2300 min^{-1}								
1150	100,0-102,0	1170	800	100,5-103,5				
B'275 PS / 2300 min^{-1}								
1150	100,0-102,0	1170	800	100,5-103,5				
B 275 PS / 2300 min^{-1}								
1150	100,0-102,0	1170						
A 250 PS / 2300 min^{-1}								
1185	96,0-98,0	1200						
B'255 PS / 2100 min^{-1}								
1050	99,0-101,0	1060	800	100,5-103,5				
B 255 PS / 2100 min^{-1}								
1050	99,0-101,0	1060						
A 232 PS / 2100 min^{-1}								
1080	95,0-97,0	1060						
F 256 PS / 2000 min^{-1}								
1000	99,0-101,0	1010	800	100,5-103,5				
B'245 PS / 2000 min^{-1}								
1000	99,0-101,0	1010	800	100,5-103,5				

① Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
B 245 PS / 2000 min^{-1}								
1000	99,0-101,0	1010						
A 222 PS / 2000 min^{-1}								
1030	95,0-97,0	1040						
B 224 PS / 1800 min^{-1}								
900	99,0-101,0	910						
A'203 PS / 1800 min^{-1}								
900	99,0-101,0	910						
A 203 PS / 1800 min^{-1}								
930	95,0-97,0	940						
B 189 PS / 1500 min^{-1}								
750	98,0-100,0	760						
A'172 PS / 1500 min^{-1}								
750	98,0-100,0	760						
A 172 PS / 1500 min^{-1}								
750	94,0-96,0	760						
D 250 PS bei 1800 min^{-1}								
900	111.0-113,0	910						
C 227 PS / 1800 min^{-1}								
900	111,0-113,0	910						
Emergency power output								
D 210 PS / 1500 min^{-1}								
750	111,0-113,0	760						
Emergency power output								

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

T23-72

C. Settings for Fuel Injection Pump with Fitted Governor

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	
C 191 PS / 1500 min^{-1}								
750	111,0-113,0	760						

Testoil-ISO 4113

Checking values in brackets

* 1 mm less control rod travel than col 2

PE 8 P 110 A 320 LS 844 RQ 300/1250 PA 473 R

supersedes 10.80
company: Daimler-Benz
engine: OM 402
(235,4 kW-320 PS)

8 - 7 - 2 - 6 - 3 - 5 - 4 - 1
0 -45 -90 -135-180-225-270-315 ± 0,50(± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,40-3,50 (3,35-3,55) mm (from BDC) cyl.8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,7+0,1	13,4 - 13,6	0,4(0,8)			
300	6,4-6,6	1,1 - 1,7	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	19,2-20,8	700	20,0	10,7	1295-1310	300	6,5	100	min.8,0	1250	11,7-11,8
								300	6,4-6,6	700	11,7-11,9
				4,0	1355-1385						
1500	0- 1,0							410-	450 =2,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,7 bar		LDA	0 bar	100	120,0-140,0 (Electromagnet 24 V)
1250	134,0-136,0 (131,0-139,0)		450	82,0-85,0 (79,0-88,0)	300	6,5
					100-	220 (80-240)

Checking values in brackets

.4.81

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

H1

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 700 rev/min ~~decreasing~~ ~~increasing~~ pressure – in bar gauge pressure MB 12,8 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
844 with 473 R	0,7 bar	0,425 0,33 0	11,7 - 11,8 11,0 - 11,1 10,3 - 10,5 9,6 - 9,7

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 8,7 c 2
1. Edition

En

PE 6 A 90 D 410 RS 2124 X RQ 375/1275 AB 658-1 DL

supersedes -
company: Daimler-Benz
engine: OM 360
110 kW (150 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,3-9,4	7,0 - 7,1	0,3(0,45)			
600	10,1+0,1	6,5 - 6,8	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
700	15,6-16,4	700	16,0	8,3 4,0	1290-1300 1345-1375	375	7,5	100 375 465- 550	min.9,0 7,4-7,6 505=2,0mm max.1,0	1250 700 895 1075	9,3-9,4 10,1-10,2 9,8-10,0 9,4-9,7

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At 1290-1300 min^{-1}

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1250	69,5-70,5 (67,5-72,5)	650	600	64,5-67,5 (62,0-69,0)	100	59,25-69,25 bei 10,2-10,6 mm RW

Checking values in brackets

2.82

H3

H3.

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 KHD 1n3
2. Edition

En

PE 8 A 95 D 410 LS 2451 RQ 300/1075 AB 1046 DL

1 - 8 - 7 - 2 - 6 - 5 - 4 - 3
0 -45 -90 -135-180-225-270-315° ± 0,5° (± 0,75°)

supersedes 8.80
company: KHD
engine: F 8 L 413 F
157 kW (213 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) 2,00-2,10 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075	9,2-9,3	8,4 - 8,6	0,3(0,6)			
300	5,9-6,1	0,9 - 1,4	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check (1)		Full-load speed regulation Setting point		Test specifications (4)		Idle speed regulation Setting point		Test specifications (5)		Torque control (3)	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	8,2	1120-1135	300	6,0	100	min.7,5	1075	9,2-9,3
				4,0	1180-1210			300	5,9-6,1	950	9,2-9,5
								350-450	390=2,0 max.1,0	800	9,6-9,8
										600	9,8-9,9

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1120-1135min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever (2) Test oil temp 40°C (104°F)		Control rod stop (3a)	Fuel delivery characteristics (3b)		Starting fuel delivery Idle speed (6)	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
1075	82,5-84,5 (80,5-87,5)	600	1000	83,0-86,0 (81,0-88,0)	100	119,0-129,0
			700	84,5-87,5 (82,5-89,5)		

Checking values in brackets

1.82

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

H4

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 PEN 6,0e
1. Edition
En

PES 6 MW 100/320 RS 1004 RSV 325-1250 MW0/308
0 403 476 011

supersedes -
company Volvo/Penta
engine TD 60 D
118 kW (160 PS)

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300 ± 0,50(0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC) RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,9+0,1	8,1 - 8,3	0,35(0,6)			
325	4,7-4,9	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0			ca.26	325	4,3	350	11,5+0,1
	x = 4,0				325	4,7-4,9	500	11,2-0,1
ca.63 (2a)	1290-1300 = 9,9 1335-1365 = 4,0 1450 = 0,3 -1,7				450-510	= 2,0	1350	10,9+0,1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	81,0-83,0 (79,0-85,0)	1290-1300*			100	min.140	325	4,8
					325	9,5 -13,5 (7,0 -16,0)		

Checking values in brackets

* 1 mm less control rod travel than col 2

4.82

H5

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 6,0 f
1. Edition

En

PES 6 MW 100/320 RS 1004 RSV 325-1050 MW4/308
0 403 476 012

1 - 5 - 3 - 6 - 2 - 4
0-60-120-180-240-300 ± 0,50 (0,75)

supersedes -
company Volvo/Penta
engine TD 60 D
112 kW (152 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,80-2,90 (2,75-2,95) mm (from BDC)

RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,0+0,1	8,2-8,3	0,35(0,6)			
325	4,7-4,9	0,95-1,35	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 . 5 6 .	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 x = 4,0			ca.26	325	4,3	350	11,5+0,1
					325	4,7-4,9	500	11,2-0,1
ca.63 (2a)	1090 - 1100=10,0 1135 - 1165= 4,0 1300 = 0,3-1,7				450 -	510 = 2,0	1050	11,0+0,1

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	82,0-84,0 (80,0-86,0)	1090-1100*			100 325	min.140,0 9,5-13,5 (7,0-16,0)	325	4,8

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.82

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H6

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 KHD 4,7 a
1. Edition

En

PES 5A 80 D 410/3 RS 2526 RSV 325-1200 A8B2147 L

1-3-5-4-2 je 72° ± 0,5° (±0,75°)

supersedes -
company KHD
engine F5L912
65 kW (88 PS)
Schlepper

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9.2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,5+0,1	6,0-6,1	0,2(0,35)			
325	8,9-9,1	0,9-1,5	0,2(0,3)			
800	12,1+0,1	C, Sp 4 u 5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.19	325	8,5	1200	11,5+0,1
	X	= 4,5					325	8,9-9,1	500	12,1+0,1
ca.56	1240-1250	=10,5					465-525	= 2,0	950	11,8+0,2
(2a)	1285-1315	= 4,0								
	1450	=0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1200	60,0-61,0 (58,5-62,5)	1240-1250*	800	58,0-60,0 (56,5-61,5)	100	19,0-21,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

1.82

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H7

Test Specifications Fuel Injection Pumps ① and Governors

Testoil-ISO 4113

PES 6 A 95 D 410 LS2485 RQV 250-1100 AB850D (1)
LS2485Z RQV 250-1100 AB850D (2)
LS2485 RQV 750 AB955 (3)

supersedes 3.84
company: M A N
engine: D 2566 M..

Komb.-Nr. 0 400 846 371 (1) MAN-Nr. 1-7727
0 400 846 403 (2) MAN-Nr. 1-7842
0 400 846 376 (3) MAN-Nr. 1-7738

(1) M/MF-177 kW/2200 min^{-1}
(2) MSFV-162 kW/2200 min^{-1}
(3) ME-126 kW/1500 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,50-1,60 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery 2485 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery 2485Z cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,7+0,1	12,3 - 12,5	0,3(0,6)	11,0+0,1	11,2 - 11,4	
250	5,9-6,1	1,1 - 1,7	0,3(0,5)	5,6-5,8	0,9 - 1,5	

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

2485 mit 850D (1)

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.50	1140	14,4-17,6	-	-	-	ca.13	100	7,5-10,2	200	0,5-2,2
	1200	4,0-10,6					200	5,7-8,5	600	3,8-4,1
	1220	0 - 8					300	2,5-5,3	1140	8,3
	1300	0 - 1					410	0		
									1140	0
						(3a)			550	0,4-0,6

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100 (1)	123,0-125,0 (121,0-127,0)	1140-1150 *	500	113,5-118,5 (111,5-120,5)	100	108,5-116,5 = 12,6-13,0 mm RW	-	-
					250	6,0 mm RW		
					130-190(120-200)			./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

B. Governor Settings

2485 Z + ROV..850 D

MAN 11,1 h

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
max.	1140	14,4-17,6		-	-	-	ca.13	100	min. 7,4	200	0,7-0,9
ca.42	10,0	1140-1150						250	5,6-5,8	500	3,5-3,8
	4,0	1175-1205						310-370	=2,0	800	4,9-5,4
	1300	0-1,0					(3a)	450	max.1,0	100	7,7

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	111,5-113,5	1140-1150*	800	114,5-118,5	100	13,7-14,3	1100	11,0+0,1
(2)	(109,5-115,5)			(112,5-120,5)		mm RW	800	11,4+0,2
			500	111,5-113,5			500	11,5+0,1
				(109,5-115,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

2485 + ROV..955

Upper rated speed				Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (2a)	(1a)	Degree of deflection of control lever	rev/min	Control rod travel mm (4)	Degree of deflection of control lever	rev/min	Control rod travel mm (3)	rev/min (1)	mm
1	2	3		4	5	6	7	8	9	10	11
ca. 29	725	16,0-22,0			-	-	-	-	-	750	4,6
	750	9,3-13,8									
	770	2,5-11,0									
	800	0					(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm^3/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
725	122,5-124,5	765-770*	-	-	-	-	-	-
(3)	(120,5-126,5)				200	7,0-11,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1) and Governors

PE 8 AM 90 D 321 RS2014 RQV 275-1500 AB837R

supersedes -
company: Hispano
engine: HS 115

1 - 8- 7 - 3 - 6 - 5 - 4 - 2
0 -45-90 -135-180-225-270-315°

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15 + 0,1 mm (from BDC) cyl. 7

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	6,6-7,0	0,4			
	6	2,8-3,6				
200	6	0,1-0,8				

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever (3a) 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1510	15,0-18,0	-	-	-	ca.13	200	6,4-8,4	220	0-0,9
	1570	11,2-14,9					350	3,5-5,5	400	1,6-2,4
	1630	6,2-11,5					600	1,6-2,7	600	2,6-3,2
	1690	0 - 7,7					800	0,1-1	1510	8,3
	1800	0					900	0	-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery, Control-rod stop, Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b), intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a), high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6), Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1200	86,5-88,5	1590-1600*			100	159,25-169,25		

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.77

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 FOR 4,2 c 1
1. Edition

En

PES 4 A 85 C 410/3 RS 2309(1) EP/RSV 575-1100 A7 B572 DL
PES 6 A 85 C 410/3 RS 2314(2) 575-1100 (500-1100)

supersedes -
company Ford
engine

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5+0,1-RW9- mm (from BDC)

Difference between RW 0 - 21 = 4 - 5.

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	4,9-5,5	0,4			
	6	1,3-2,1				
	15	12,3-13,1				
200	9	3,9-4,4				

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.59	1115	12,0	without auxiliary spring	ca.23	550	4,7		
	1125	6,0			100	19-21	1100	0
	1135	2,2			550	4,4-5,0		
ca.58 (2a)	1115	8,5-9,5	with auxiliary spring		630	0 - 1	650	0,1-0,3
	1140	3,5						
	1200	0,3-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

	(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to): rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
(1)	1080	69,0-71,0	1110-1120	500	max. 62,5				
(2)	ca. 10 mm RW - Carry out adjustment on engine (inrease by · 1,0 cm³!)								

Checking values in brackets

* 1 mm less control rod travel than col 2

1.77

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H11

HAA

Test Specifications Fuel Injection Pumps (1A) and Governors

40

VDT-WPP 001/4

1. Edition

En

PES 6 AM 90 D 410 RS 2015 EP/RSV 200-1100 A1 B1055 DL

supersedes -

company MAN

engine D 2156 HMV

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 + 0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	5,9-6,3	0,4			
	6	2,5-3,4				
200	9	3,2-4,1				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.65	1100	16,0		ca.27	200	7,5	1080	0
	1150	12,6	without auxiliary spring		100	19-21	850	0,2-0,6
	1200	8,0			200	7,2-7,8		
	1180	8,2-11,0			400	2,7-5,2		
(2a)	1250	3,5-6,1	with auxiliary spring		650	0 - 1	350	0,3-0,7
	1400	0,3-1,0						

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40° C (104 F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	100,0-102,0	1120-1135	800	96,5.99,5	100	15,7-16,3		
			500	max. 95,0		mm RW		
Set lower delivery at inner lever!								
1100	81,0-83,0							

Checking values in brackets

* 1 mm less control rod travel than col 2

12.75

H12

H12

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 MB 5,7 q 3
5. Edition

En

PES 6 A 90D 410RS 2293 RSV 350-1300A0B1105DL(1)
RS 2293Z 350-1300A0B1101DL(2)

supersedes 8.81
company Daimler Benz
engine OM 352
93 kW(125PS)(1)
70 kW(94PS)(2)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) / 2,15-2,25) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery ..2293 cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery ..2293Z cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	9,5-9,6	6,2-6,3	0,3(0,45)	8,2-8,3	4,0-4,1	
350	6,3-6,5	0,4-0,9	0,2(0,4)	6,9-7,1	0,7-1,1	
800	10,2+0,2	C,Col.4-5	0,4(0,55)			
500	10,3+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

..2293 with 1105DL (1)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3 - 1,0	-	-	-	ca.28	350	5,9	1300	9,5-9,6
	X =	5,5					100	min19,0	800	10,2-10,4
ca.64	8,5	1340-1350					350	6,3-6,5	500	10,3-10,4
(2a)	4,0	1380-1410					700	max. 1,0		
	1550	0,3-1,7				490-550 =		2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1300	62,5-63,5 (60,5-65,5)	1340-1350*	800	60,0-62,0 (58,0-64,0)	100	79,25-89,25 13,7 - 14,3 mm RW	350	6,4
			500	54,0-56,0 (52,0-58,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

2.82

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H14

The numbers denote the sequence of the tests

B. Governor Settings

..2293 Z with RSV-1101 DL (2)

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 0,3-1,0		-	-	-	ca.20	350	6,5	1300	8,2-8,3
	x = 3,0						100	min.19,0	800	9,0-9,2
ca.66	7,2	1340-1350					350	6,9-7,1	500	9,4-9,5
	4,0	1370-1400					680	max.1,0		
②a	1500	0,3-1,7					520 -	580 =2,0		

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)		⑥ Rotational-speed limitat. Note: changed to ...)	③a Fuel delivery characteristics		Starting fuel delivery Idle ⑤		④a Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1300	40,5-41,5 (38,5-43,5)	1340-1350*	800	42,0-45,0 (40,0-47,0)	100	13,7-14,3 mm RW	350	7,0
			500	36,5-38,5 (34,5-40,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

En

H15

HAS

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 1 o
4. Edition
En

Testoil-ISO 4113

PES 6 A 95 D 410 RS 2625 RSV 325-1150 A8B 674 DL
A8C 674 L

Komb.-Nr. 0 400 876 305

supersedes 3.84
company: KHD
engine: B F 6 L 913 B
Excavator

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9 - 2,0 (1,85-2,05) mm (from BDC)

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm³/100 strokes	cm³/ 100 strokes	mm	cm³/100 strokes	mm
1	2	3	4	2	3	6
1150	11,4+0,1	8,0 - 8,2	0,3(0,6)			
325	7,2-7,4	1,6 - 2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 X =	0,3-1,0 3,0	-	-	-	ca. 15	325	6,8	1150	11,4+0,1
									500	12,1+0,1
									1000	11,8+0,2
(5) ca. 50	10,4 4,0 1325	1190-1200 1265-1295 0,3 - 1,7					325 585-645	7,2-7,4 = 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle		(5a) Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...						Control rod travel
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
LDA 1150	0,7 bar 80,0 - 82,0 (78,0 - 84,0)	1190-1200*	LDA 800	0,7 bar 83,0-86,0 (80,5-88,5)	100	116,5-126,5 (113,5-129,5) = 15,9 - 16,4 mm RW		
			LDA 500	0 bar 56,5 - 59,5 (54,5 - 61,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.84

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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

H16

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 A..RS 2625 with .. A8B 674 DL .. A8C 674 L	0,7		12,2 - 12,3
		0	11,1 - 11,2
		0,36	11,9 - 12,0
		0,2	11,1 - 11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 6,1e1
5. Edition
En

Testoil-ISO 4113

PES 6 A 95 D 410 RS 2471 RSV 325-1150A 8 B 674 DL
Komb.-Nr. 0 400 876 275 A 8 C 674 DL

supersedes 6.83
company: KHD
engine: BF 6 L 913 C
132 kW/2300 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at prestroke (1,85-2,05) 1,90-2,00 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,8+0,1	10,8 - 11,0	0,3(0,6			
325	7,2-7,4	1,6 - 2,2	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	(4) Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.15	325	6,8	500	11,8+0,1
	x =	4,75					100	min. 19		
(5) ca. 55	1190-1200=10,8 1235-1265= 4,0 1400=0,3-1,7						325 615-675	7,2-7,4 =2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 108,0-110,0 (106,0-112,0)	1190-1200*	LDA 850	0,7 bar 102,5-105,5 (100,5-107,5)	100	120,0-130,0 (117,0-133,0 = 15,9 - 16,4 mm RW	325	6,8
			LDA	0 bar 62,0-64,0 (59,5-66,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution / difference mm (1)
2471 with 674 DL	0,7 bar		11,8 - 11,9
		0	10,6 - 10,7
		0,27	11,6 - 11,7
		0,1	10,8 - 11,0

Notes

(1) when n = rev/min and gauge pressure bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MWM 6,2 d
6. Edition
En

PES 6 A D 320/3 RS 2483 RSV 325-1200 A2 B 777DR
Change of governor to
RSV 400-1200 A2B 777 R

supersedes 3.80
company MWM
engine TD 228-6

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) RW 9 mm (from BDC)

Difference between CRT9 + 21 3.5-4.5°

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1180	10,5-10,6	7,3-7,4	0,3(0,45)			
325	7,4-7,6	0,6-1,2	0,2(0,4)			
750/500	- - - -	C,Col.4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 . 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.45	1180 = 10,5-10,6 1220 = 1230=9,5 1255-1285=4,0		without auxiliary spring	ca.19	325	6,5	1180	10,5-10,6
					100	min.19	750	11,3-11,4
					325	6,4-6,6	500	11,6-11,7
	1225 9,5-9,6				550-560	= 2,0		
(2a)	1300 3,2-4,4 1400 0,3-1,7		with auxiliary spring		700	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1180	0,7 bar 73,0-74,0 (71,0-76,0)		LDA 500	0,7 bar 72,0 - 74,0 (70,0 - 76,0)			325	6,5
LDA 750	0,7 bar 79,0-82,0 (77,0-84,0)		LDA 500	0 bar 56,5 - 59,5 (54,5 - 61,5)	325	6,25 - 12,25		

Checking values in brackets

* 1 mm less control rod travel than col 2

5.80

H20

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure MWM 6,2d

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
2483 with 777 DR	0,68		11,6 - 11,7
		0,09	10,6 - 10,7
		0,05	9,4 - 9,6
		0	9,0 - 9,1

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 3,8k1
3. Edition
En

PES 4 A 90 D 410 RS 2294 EP/RSV 750-1400 AO B2022 DL

supersedes 11.80
company Daimler-Benz
engine OM 314 (85 PS)

1 - 3 - 4 - 2
0-90-180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC) RW = 10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1345	10,5 + 0,1	7,1 - 7,3	0,3(0,45)			
750	5,9 - 6,1	1,6 - 2,2	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0 X = 3,7			ca.30	750	6,0		± 0,1
					100	min.19	450	10,6
ca.51 (2a)	1385-1390 = 9,5 1435-1440 = 3,6 1500 = 0,3-1,7				750 765-795 820	5,9-6,1 = 2,0 0-1	600	12,3

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1345	71,5 - 72,5 (69,5 - 74,5)	1385-1390*			100	84,25 - 91,25	750	6,0

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

H22

H22

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7w3

2. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350 - 1275 A0 B 1138 L

supersedes 11.80

company Daimler-Benz

engine OM 352
62 kW (84 PS)

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,20-2,40) 2,25-2,35 mm (from BDC) RW = 10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	8,4-8,5	4,0 - 4,1	0,3(0,25)			
350	8,4-8,6	0,8 - 1,4	0,2(0,4)			
750	-	C, Col. 4-5	0,4(0,3)			
600			0,4(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.35	350	8,0	1250	8,4-8,5
	x = 6,0						350	8,4-8,6	785	9,1-9,3
ca.72	1290-1300 = 7,4						715-785	=2,0	500	9,8-9,9
(2a)	1330-1360 = 4,0									
	1545 = 0,3- 1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1250	40,5-41,5 (39,5-42,5)	1290-1300*	750	39,5-41,5 (38,5-42,5)	100	79,25-89,25	350	8,5
			600	37,0-39,0 (36,0-40,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

H23

Test Specifications Fuel Injection Pumps and Governors

40

WPP u01/4 MB 5,7w4

1. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350-1300 A0B 1137 L

supersedes Daimler-Benz
company OM 352 ECE
engine 70 kW (95 PS)

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,20-2,40) 2,25-2,35 mm (from BDC) RW = 10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	9,1	4,2 - 4,3	0,3(0,45)			
	+0,1					
350	8,4-8,6	0,8 - 1,4	0,2(0,4)			
500	-	C, Col. 4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 6,0				ca.14	350	7,9	1300	9,1-9,2
							350	9,1-9,3	800	9,8-10,1
ca.53	1340-1350=8,1						650-710	= 2,0	500	10,2-10,3
(2a)	1360-1390=4,0									
	1550=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1300	42,0-43,0 (40,0-45,0)	1340-1350*	500	34,5-37,5 (32,5-39,5)	100	79,25-89,25 16,2-16,6 mm RW	350	8,5
					350	8,25-14,25		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

H24

H24

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7w6
1. Edition
En

PES 6 A 90 D 410 RS 2569 RSV 350-1400 AOB 1134 L

supersedes -
company Daimler-Benz
engine OM 352
95 kW (130 PS)

1 - 5 - 3 - 6 - 2 - 4
0 - 60-120-180-240-300

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35 (2,20-2,40) mm (from BDC) RW = 10,5 mm

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,7	6,0 - 6,1	0,3(0,45)			
	+0,1					
350	8,3-8,5	0,7 - 1,3	0,2(0,4)			
500	- -	C, Col. 4-5	0,4(o,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm +0,1 11
loose	800	0,3-1,0				ca.27	350	7,5	1400	10,7
	x = 5,0						350	9,3-9,5	900	11,3
ca.68	1440-1450=9,7						635-696 =	2,0	300	12,0
(2a)	1485-1515=4,0									
	1625=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1400	60,0-61,0 (58,0-63,0)	1440-1450*	500	52,5 - 55,5 (50,5 - 57,5)	100	79,25-89,25 16,2-16,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

J1

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7w8

1. Edition

En

PES 6 A 90 D 410 RS 2569 RSV 350-1300 AOB 1140 L

supersedes –

company Daimler-Benz

engine OM 352
81 kW (110 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,20-2,40) 2,25-2,35 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1300	10,1	5,3-5,4	0,3(0,45)			
	+0,1					
350	8,6-8,8	0,9-1,5	0,2(0,4)			
500	- -	C, Col. 4-5				

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.20	350	2,0*	1300	10,1-10,2
					350	8,6-8,8	1050	10,6-10,9
ca.61	1340-1350=9,1				630-690	= 2,0	500	11,3-11,4
(2a)	1450-1480=4,0							
	1550=0,3-1,7							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to: rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1300	53,0-54,0 (51,0-56,0)	1340-1350*	500	45,0-47,0 (43,0-49,0)	100	79,25-89,25	350	8,7

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

J2

32

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 HAN 10,8 a 1
5. Edition

En

PE 6 A 95 D 320 RS 2364 EP/RSV 350-1100 A8 B1070R
RS 2557 A8 B1127R

superseded 8.80
company MF-Hanomag
engine D 963 A1

** Test cold-start device according to VDT-I-DAF 004, page 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1100	13,5	13,5-13,8	0,3(0,6)	13,5	13,1-13,3	n 1100
	+0,1			+0,1		
350	6,7-6,9	1,4-2,0	0,3(0,5)	6,6-6,8	1,4- 2,0	n 350
500	- - - -	C, 4-5	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0		ca.24	350	5,5	480	13,5-13,6
	x =	5,5			100	min. 19		
ca.57	12,5	1140-1150			350	5,9-6,1	400	13,8-14,2
(2a)	4,0	1205-1235			435-495	= 2,0		
	1380	0,3 - 1,7			600	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	134,0-136,0 (132,0-138,0)	1140-1150*	500	131,0-134,0 (129,0-136,0)	100	20-20,5 mm RW**		

Checking values in brackets

* 1 mm less control rod travel than col 2

2.81

J3

JG

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	 5	 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 5,5				ca.25	350	62	1100	13,5
							100	min.19,0	480	13,5-13,7
ca.57	12,5 = 1140-1150 4,0 = 1205-1235						350	6,6-6,8	400	13,8-14,2
(2a)	1380 = 0,3-1,7						490-550 600	= 2,0 1,0		

Testoil-ISO 4113

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1100	130,0-132,0 (128,0-134,0)	1140-1150*	500	126,5-129,5 (124,5-131,5)	100	20-20,5 mm RW**		

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	 5	 6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col. 2

J4

J4

En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1c
1. Edition
En

PES 6 MW 100/720 RS 1012 RQV 425-1000 MW 36-1
0 403 446 133

supersedes
company: OM Brescia
engine: 8365.25.530
121,5 kW (165 PS)

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300 ± 0,5 (0.75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) | RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,7+0,1	9,1 - 9,3	0,35(0,6)			
425	6,4-6,5	1,55-1,75	0,35(0,55)			
700	12,6+0,1		0,5 (0,7)			
500	11,5+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.26	425	5,4-6,5		
	1200	0 - 1,0					100	min.8,0		
ca.51	10,7	1040-1050					490-550= 2,0			
	4,0	1120-1150				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9 +0,1
LDA	0,6 bar		LDA	0,6 bar			500	12,5
1000	91,0-93,0 (89,0-95,0)	1040-1050*	700	102,0-104,0 (99,0-106,0)	100	19,0 - 21,0 RW	700	12,6
							800	12,4
			LDA 500	0 bar 71,5-73,5 (69,5-75,5)		160,0-180,0	950 1000	11,7 11,7

Checking values in brackets

* 1 mm less control rod travel than col. 2

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J5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min pressure – in bar gauge pressure OMB 8,1 c

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
RS 1012 with RQV-MW 36-1	0,36	0,6 0 0,31	12,2 - 12,3 12,6 - 12,7 11,5 - 11,6 11,8 - 11,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 8,1d
1. Edition
En

PES 6 MW 100/720 RS 1012 RQV 425-1100 MW 36
0 403 446 127

supersedes –
company: OM-Brescia
engine: 8365.25.580
129 kW(175 PS)

1 - 5 - 3 - 6 - 2 - 4
0 - 60-120-180-240-300 ± 0,5 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,90-3,00 (2,85-3,05) mm (from BDC) 10,5 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,5+0,1	9,6-9,8	0,35(0,6)			
425	5,8-6,0	1,15-1,55	0,35(0,55)			
700	12,4+0,1		0,5 (0,7)			
500	11,2+0,1		0,35(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca.14	425	5,8-6,0		
	1300	0- 1,0					100	min.7,5		
ca.49	10,5	1140-1150					470-530	=2,0		
	4,0	1185-1215				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,5 bar		LDA	0,5 bar			700	12,4+0,1
1100	96,0-98,0 (94,0-100,0)	1140-1150*	700	101,0-105,0) (99,0-1,7,0)	100	RW max. 19 min. 70,0	1000	11,5+0,1
			LDA 500	0 bar 75,0-77,0 (73,0-79,0)	100-220 (80-240)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.82

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J7

J7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
RS 1012 with RQV-MW 36	0,27		12,1 - 12,2
		0,2	11,5 - 11,7
		0,5	12,4 - 12,5
		0	11,2 - 11,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 6,1 k

3. Edition

En

PES 6 A 85 D 410/3 RS 2592 RQV 300-1250 AB 1089 L

Komb.-Nr. 0 400 836 026

supersedes 9.82

company: KHD

engine: BF 6 L 913

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,9+0,1	9,1-9,2	0,3(0,45)			
300	6,8-7,0	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca. 14	100	min.8,4	250	0,5-0,7
							300	6,8-7,0	550	3,4-3,6
ca. 68	10,9	1290-1300							900	5,2-5,4
	4,0	1370-1400							1250	8,1
	1500	0-1,0				325-500				
						(3a)				

Torque control travel a = 0,40 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9	
LDA 1250	0,7 bar 91,0-92,0 (89,0-94,0)	1290-1300*	LDA 800	0,7 bar 86,5-89,5 (84,0-92,0)	100	110,0-120,0 (107,0-123,0)	1250	11,9+0,1	1
							500	12,3+0,1	1
							800	12,2+0,1	1
			LDA 500	0 bar 62,5-65,5 (60,5-67,5)			975	12,0+0,2	2

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.85

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

J9

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PES 6 A..RS 2592 + AB 1089 L	0,7	0 0,40 0,28	12,2-12,3 10,8-10,9 12,0-12,1 11,3-11,5

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

PE 10 A 95 D 520/5 LS 2501 RQV 250-1250 AB 1051 DR

1 - 8 - 7 - 6 - 3 - 5 - 2 -10 - 9- 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes
company MAN
engine. D 2530 MTXF
294 kW (400 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8 (1,65-1,85) mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,3+0,1	12,5 - 12,6	0,3(0,6)			
250	5,9-6,1	1,5 - 2,1	0,3(0,5)			
750	12,3+0,1	C, col.4-5	0,4(0,7)			
500	10,0+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca. 50	1275	14,4-17,4	-	-	-	ca. 13	100	min. 7,5	200	0,7-0,8
							250	5,9-6,1	550	4,3-4,6
ca. 48	11,5	1290-1300					320-380	=2,0mm	900	5,7-6,1
	4,5	1365-1395					500	max. 1,0	1250	8,3
	1500	0 - 1,0				(3a)				

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1250	0,5 bar 123,0-125,0 (121,0-127,0)	1290-1300 *	LDA 750	0,5 bar 119,5-122,5 (117,5-124,5)	100	169,0-179,0	-	-
			LDA 500	0 bar 76,5- 79,5 (74,5- 81,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.82

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE10A..LS2501 with..AB1051DR	0,5		12,3 - 12,4
		0,29	11,6 - 11,9
		0,21	10,5 - 10,7
		0	10,0 - 10,1

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testoil-ISO 4113

PE 10 A 95 D 520/5 LS 2501 RQV 250-1150 AB 1069 DR

supersedes -
company: MAN
engine: D 2530 MTX
265 kW (360 PS)

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10- 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7 - 1,8 (1,65-1,85) mm (from BDC) Cyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,7+0,1	12,0 - 12,2	0,3(0,6)			
250	5,9-6,1	1,5 - 2,1	0,3(0,5)			
750	12,1+0,1	C, col.4-5	0,4(0,7)			
500	9,9-10,0					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min. 7,5	200	0,7-0,9
							250	5,9-6,1	520	3,8-4,0
ca. 44	10,7	1190-1200					325-385=2,0mm		830	5,2-5,5
	4,0	1240-1270					450	max. 1,0	1150	7,7
	1400	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA	1,2 bar	1190-1200*	LDA	1,2 bar	100	169,0-179,0	1150	11,7+0,1
1150	118,5-120,5		750	118,5-121,5		16,7-17,3 mm RW	500	12,1+0,1
	(116,5-122,5)			(116,5-123,5)			825	11,9+0,2
			LDA	0 bar	250	RW 7,0 mm	975	11,7+0,2
			500	78,0- 81,0				
				(76,0- 83,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.82

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung

J13

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE10A..LS2501 with ..AB1069DR	0,9		11,7 - 11,8
		0,33	11,5 - 11,6
		0,26	10,5 - 12,1
		0	9,9 - 10,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 KHD 1 e 5
1. Edition

En

PE 8 A 95 D 410 LS 2609 RQV 300-1250 A B 1128 L

1-8-7-2-6-5-4-3 je 45° ± 0,5° (± 0,75°)

supersedes -
company: KHD
engine: BF 8 L 413 F
235 kW(320 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5+0,1	11,5-11,7	0,3(0,6)			
300	6,4-6,6	1,1- 1,7	0,3(0,5)			
850	12,0+0,1					
500	10,2+0,1	C, Sp. 4+5				

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1250	15,2-17,8	-	-	-	ca.15	100	min.8,0	250	0,5-0,7
							300	6,4-6,6	600	2,9-3,2
ca.68	10,5	1290-1300							950	4,9-5,1
	4,0	1375-1395					670-730=2,0mm		1250	7,7
	1450	0 - 1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	0,7 bar	1290-1300*	LDA	0,7 bar	100	129,0-139,0	1250	11,5+0,1
1250	113,5-115,5 (111,5-117,5)		850	118,0-121,0 (116,0-123,0)		15,2-15,6 mm RW	500	12,1+0,1
							1050	11,7+0,2
			LDA 500	0 bar 77,0-80,0 (75,0-82,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

J15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm (1)
PE 8 A.. LS 2609 with.. AB 1128 L	0,7	 0 0,43 0,22	12,0 - 12,1 10,2 - 10,3 11,7 - 11,8 10,7 - 10,9

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 1 40
1. Edition
En

PE 12 A 95 D 610 LS 2453 RQV 300-1150 AB 1056 DL

supersedes -
company: KHD
engine: BF 12 L 413
272 kW (370 PS)

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5°
(± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,3+0,1	9,2-9,4	0,3(0,6)			
300	6,4-6,6	0,9-1,5	0,3(0,5)			
775	10,7+0,1	C,Col.4-5	0,4(0,7)			
500	10,2+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca.14	100	min.8,0	250	0,2-0,8
							300	6,4-6,6	550	2,8-3,2
ca.66	9,3	1190-1200							850	4,7-5,0
	4,0	1240-1270							1150	7,9
	1350	0 - 1,0				310-380 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 90,5-92,5 (88,5-94,5)	1190-1200*	LDA	0,7 bar 94,5-98,5 (92,5-100,5)	100	119,0-129,0 14,4-14,6 mm RW	1150	10,3+0,1
							500	10,7+0,1
							775	10,7+0,1
							930	10,5+0,2
			LDA 500	0 bar 76,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.82

J17

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 12 A.. LS2453 with ..AB 1056 DL	0,7	0 0,33 0,28	10,7 - 10,8 10,2 - 10,3 10,6 - 10,7 10,4 - 10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 MB 8,7 m
1. Edition
En

PES 6 MW 100/720 RS 1101 RQV 300-1300 MW 34
0 403 446 124

1 - 5 - 3 - 6 - 2 - 4
0 -60 -120-180-240-300± 0,50 (0,75)

supersedes –
company: DB
engine OM 362 LA
141,0 kW (192 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,20-3,30 (3,15-3,25) mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,9+0,1	9,45-9,65	0,35(0,6)			
300	6,0+0,1	1,05-1,45	0,35(0,55)			
800	11,9+0,1		0,5 (0,7)			
500	10,2+0,1		0,35(0,6)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1300	15,2-17,8				ca.20	300	6,0-6,1		
	1600	0,1- 1,0					100	min.7,6		
ca.61	10,9	1340-1350					460-520	=2,0		
	4,0	1460-1490				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA	o,7 bar		LDA	0,7 bar	100	80,0		
1300	94,5-96,5 (92,5-98,5)	1340-1350*	800	89,5-93,5 (87,5-95,5)				
			LDA	0 bar				
			500	54,5-56,5 (52,5-58,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.82

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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

J19

D. Adjustment Test for Manifold Pressure Compensator

MB 8,7 m

Test at n = 500 rev/min – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
RS 1101 with MW 34	0,38		11,4 - 11,5
		0,7	11,9 - 12,0
		0	10,2 - 10,3
		0,3	10,7 - 10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 11,1 p
9. Edition
En

Testoil-ISO 4113

PES 6 A 95 D 410 LS 2542 RQV 250-1100 AB 850 DL
Komb.-Nr. 0 400 846 420

supersedes 10.83
company: MAN
engine: D 2566 M /MF
177 kW /2200 min^{-1}
MAN-Nr. 1-7943

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 (1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Difference cm^3/100 strokes 4	Control rod travel mm 2	Fuel delivery cm^3/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,0+0,1	12,5 - 12,7	0,3(0,6)			
250	5,9-6,1	0,9 - 1,4	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 13	100	min. 7,5	200	0,5-1,2
ca. 42	11,0	1140-1150					250	5,9-6,1	600	3,8-4,1
	4,0	1180-1210					325-385	=2,0mm	1140	8,3
	1300	0 - 1,0					450	max.1,0		
						(3a)				

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm^3/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm^3/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm^3/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1100	124,5-126,5 (122,5-128,5)	1140-1150*	750	113,0-116,0 (110,5-118,5)	100	121,5-131,5 (118,5-134,5) = 14,0-14,6 mm RW	-	-
			500	107,5-113,5 (105,0-116,0)	250	6,0 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

7.84

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B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rodtravel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
max.	1260	15,2-17,8		-	-	-		ca.12	100	min.7,5		200	0,7-0,9
									250	5,9-6,1		500	2,8-3,1
ca.42	11,0	1140-1150										800	5,2-5,5
	4,0	1260-1290											
	1400	0 - 1,0							320-380=2,0mm			1100	7,2
								(3a)					

Torque control travel a = 0 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1100	127,5-129,5 (125,5-131,5)	1140-1150*	500	min.113,5	100	14,0-14,6 mm RW	-	-
					250	6,0		
					100-	170(80-190)		

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil-ISO 4113

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel (1)	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min (1a) (2a)		Degree of deflection of control lever	rev/min	Control rod travel mm (4)		Degree of deflection of control lever	rev/min	Control rod travel mm (3)		rev/min	mm
1	2	3		4	5	6		7	8	9		10	11
								(3a)					

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery Idle switching point (6)		Torque-control travel (5)	
rev/min	cm^3/1000 strokes	rev/min	rev/min	cm^3/1000 strokes	rev/min	cm /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 BUK 1,5c
1. Edition
En

VE 3/10 F 1800 L 70
0 460 403 004 Overflow temperature 45° C

supersedes
company: Bukh
engine: DV 36 TME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1200	2,9-3,3	mm	0,67	
1.2 Supply-pump pressure	1200	5,1-5,7	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	600	31,0-33,0	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1200	46,0-48,0	cm³/1000 strokes	0,67	
1.4 Idle regulation	450	5,5-9,5	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes	0	
1.6 Start	1850	20,0-26,0	cm³/1000 strokes	0,67	
1.7 Load-dependent port-closing	-	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	900	1200	1600
	mm	1,1-1,9(0,8-2,2)	(2,4-3,8)	5,0-5,8(4,7-6,1)
2.2 Supply pump	n = rev/min	200		1800
	bar (kgf/cm²)	0,8-1,4		8,0-8,6
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	max.2000	0		0,67
	1900	2,0-8,0	(1,0-9,0)	0,67
	1850		(19,0-27,0)	0,67
	1700	44,5-45,5	(42,7-47,3)	0,67
	1200		(44,7-49,3)	0,67
	+600	35,5-37,5	(33,5-39,5)	0,27
	600		(29,0-35,0)	0
switch-off	1800	0		
Idle stop	480-530	0		0
	450		(3,5-11,5)	0
End stop	500	min.40,0		
	580	max.40,0		
2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V		

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,9-6,1
MS	0,7-0,9
SVS	max.4,2
X XK	10,2-22,2
X XL	12,5-15,8

Observations

+ LDA-stroke 4,0 mm
Use adjusting nut (46) to correct.

BOSCH

J23

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 MAN 3,7 c
1. Edition
En

VE 4/10 F 1500 R 57-1
0 460 404 014

Overflow temperature 45° C

supersedes –
company: MAN
engine: D 0224 ME

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	5,3-5,7	mm		
1.2 Supply-pump pressure	1000	5,5-6,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	61,5-62,5	cm³/1000 strokes		2,5(3,5)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	10,0-14,0	cm³/1000 strokes		2,5(3,5)
1.5 Full-speed regulation	100	min. 60,0	cm³/1000 strokes		
1.6 Start	1650	4,0-10,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1400
	mm	2,6-3,4(2,3-3,7)	(4,8-6,2)	7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min	600		1400
	bar (kgf/cm²)	3,6-4,2		7,0-7,6
Overflow delivery	n = rev/min	500		1500
	cm³/10 s	55-100(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1680-1740	0		
	1650		(2,5-11,5)	
	1550	max.60,0		
	1480	68,5-71,5	(67,3-72,7)	
	1000		(59,3-64,7)	
	600	57,25-60,75	(55,6-62,4)	
switch-off	1500	0		
Idle stop	400-450	0		
	350		(7,5-16,5)	
End stop	400			
	470			
2.4 Solenoid	cut-in voltage	min.20,0 V rated voltage 24V		

3. Dimensions

for assembly and adjustment mm

Designation	
K	--
KF	5,7-5,9
MS	1,1-1,3
SVS	max.4,6
X XK	25,0-27,0
R XL	12,2-15,5

Observations
pushing electronagnet
24 V

J24

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 SOF 2,5d
1. Edition
En

VE 4/9 F 2100 R 87
0 460 494 090

Overflow temperature 45° C

supersedes –
company: Sofim
engine: 8144.61

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1800	7,4-7,8	mm		
1.2 Supply-pump pressure	1800	6,3-6,9	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	2000	37,5-38,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	370	8,0-12,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.55,0	cm³/1000 strokes		
1.6 Start	2350	19,0-25,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	1800	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	1800	2100
	mm	1,8-2,8(1,6-2,0)	(6,9-8,3)	8,2-9,2(8,0-9,4)
2.2 Supply pump	n = rev/min	400		2100
	bar (kgf/cm²)	2,9-3,5		6,9-7,5
Overflow delivery	n = rev/min	500		2100
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	max. 6,0		
	2350		(18,0-26,0)	
	2100	36,7-39,3	(35,7-40,3)	
	2000		(35,7-40,3)	
	1100	43,5-46,5	(42,7-47,3)	
	600	35,5-38,5	(34,0-40,0)	
switch-off	2100	0		
Idle stop	500	max.6,0		
	370		(6,0-14,0)	
End stop	400			
	480			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,4-5,6
MS	1,7-1,9
SVS	max.2,7
A XK	25,0-27,0
B XL	8,9-12,3

Observations

K1

K1

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,8 g 2
1. Edition
En

PES 4 A 90 D 410 RS 2294 RQV 300-1425 AB 740 L

supersedes
company Daimler-Benz
engine OM 314
62,5 kW (85 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1 - 2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,3-6,4	0,3(0,45)			
300	6,8-7,0	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1425	16,0-19,4	-	-	-	ca.10	100	min.7,4	250	0,7-1,0
ca.61	8,7	1460-1470					300	5,8-6,0	640	3,2-3,6
	4,0	1535-1565					590-650	=2,0mm	1030	5,5-5,7
	1650	0 - 1,0					750	max.1,0	1425	8,1
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1400	62,5-63,5 (60,5-65,5)	1460-1470*	-	-	100	13,7-14,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.82

BOSCH
Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

K2

Test Specifications Fuel Injection Pumps ① and Governors

VDT-WPP 001/4 MWM8.8b
1. Edition

En

PE 8 A 100 D 320 RS 3018 EP/RZU 900A2/17 R
PE 8 A 100 D 300 RS 3019 - - -

supersedes -
company: MWM
engine D 232-8

1 - 8 - 5 - 4 - 7 - 2 - 3 - 6
0 -30 -90 -120-180-210-270-300°

Test sequence overleaf!

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0+0,1 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	7,6 - 8,2	0,4			
	6	3,2 - 4,2				
	12	12,3 -13,4				
200	9	3,4 - 4,6				

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
Full	900	14,0								
	950	8,2-8,9								
	1000	2,5-3,7								
	1020	1,0-1,6								
	1070	1,0				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
880	76,5 - 77,5	925:2,3 mm less than column 2!	900	63,5-68,5				

./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

K3

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

K3

Test sequence - EP/RZU - :

1. Basic setting of pump - Section A of test-specification sheet.
2. Basic setting of governor - Section B.
3. Speed regulation - Section C, Column 3.
4. Adjustm. of full-load del. - Sect.C, Column 1-2. -Establish contr.-rod travel.
5. Checking of breakaway - Section C, Column 3.
6. Check measurement, Section C, Column 4-5.

K4

PE 6 A 90 D 320 RS 2547 RQ 250/1200 AB 1022 R
See Service Information
VDT-I-DAF 004

supersedes 5.81
company DAF
engine DT 615
113 kW (153 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) RW 9

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,8+0,1	1,7-7,2	0,3(0,45)			
250	6,9-7,1	1,1-1,5	0,2(0,4)			
600	9,8-10,0	C, col.4-5	0,4(0,55)			
Port closing difference between control-rod travel 9 mm and max. 2,5° - 3,5° camshaft						

Adjust the fuel delivery from each outlet according to the values in [ ].

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Full-load speed regulation Test specifications ④		Idle speed regulation Setting point		Idle speed regulation Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,6-20,4	650	20,0	9,8	1245-1265	250	8,5	100	min.10,0	-	-
								250	8,4-8,6		
VH=	4 9°			4,0	1340-1370			405-550	465=2,0		
				1500	0-1,0				max.1,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1245-1265 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
LDA 1000	0,7 bar 71,0-72,0 (69,0-74,0)		LDA 600	0 bar 50,0-52,0 (48,0-54,0)	- 250	- 7,0

Checking values in brackets

2.82

K5

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
..RS 2547 with RQ ..AB 1022 R	0,70	0,27 0,16 0	10,8-10,9 10,6-10,7 9,9-10,1 9,8-10,0

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors ②

WPP 001/4 DAF 8,3 k
5. Edition

En

PE 6 A 95 D 410 RS 2525, Y, X RQ 225/1200 AB 1007 L

supersedes 8.80
company: DAF
engine: DN 825 (Y.X)
DHR 825

Test LDA and cold start in accordance with Service Information

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) 2,00-2,10 mm (from BDC) RW 9

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	10,8-11,0	0,3(0,6)			
225	5,7-5,9	0,7- 0,9	0,3(0,5)			
600	11,2+0,1	C, col.4-5	0,4(0,7)			
Port closing difference between control-rod travel 9 mm and max. 3,0 - 4,0° camshaft						

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,2-20,8	650	20,0	11,6	1230-1245	225	5,8	100	min.7,2	-	-
VH=	49°			4,0	1315-1345			225	5,7-5,9		
				1450	0 - 1,0			340-450	380=2,0 max.1,0		

Torque-control travel on flyweight assembly dimension a = mm Speed regulation At 1230-1245 min-1 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel cm³/1000 strokes / mm 7
LDA	0,7 bar		LDA	0 bar	100	19,0-21,0
1000	106,5-108,5 (104,5-110,5)		600	77,5-80,5 (75,5-82,5)		
X			X			
1000	90,5-92,5	(12 mm RW	600	77,0-80,0		
Y			Y			
1000	99,0-101,0	(12,5 mm RW)	600	77,0-80,0		

Checking values in brackets

2.82

K7

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure DAF 8,3 k

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
PE 6 A ..RS 2525 with ..AB 1007 L	0,7	0,30 0,25 0	12,6-12,7 12,2-12,3 11,5-11,7 11,2-11,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 1 d 7
1. Edition
En

PE 6 A 95 D 410 LS 2621 RQ 300/1250 AB 1148 L

supersedes -
company: KHD
engine: F6L413F

1 - 6 - 5 - 4 - 3 - 2
0 -75 -120-195-240-315° ± 0,5° (± 0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,10 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,6-9,7	8,4-8,6	0,3(0,6)			
300	6,9-7,1	1,6-2,2	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation				Idle speed regulation				Torque control ③	
		Setting point		Test specifications ④		Setting point		Test specifications ⑤			
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	19,2-20,8	550	20,0	8,6	1295-1310	300	7,0	100	min.8,5	1250	9,6- 9,7
				4,0	1325-1355			300	6,9-7,1	550	10,1-10,2
VH=	49°							345-450	385=2,0 max.1,0	910	9,9-10,1
										990	9,6- 9,9

Torque-control travel on flyweight assembly dimension a = 0,25 mm

Speed regulation: Δn 1295-1310 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1250	82,5-84,5 (80,5-86,5)	600	800	85,0-88,0 (83,0-90,0)	100	119.0-129,0

Checking values in brackets

2.82

K9

KS

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 REN 2, Od
1. Edition
En

VE 4/9 F 2200 R 69
0 460 494 055 Overflow temperature 45° C

supersedes –
company: Renault
engine: J 8 S - 702

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Testoil-ISO 4113

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1400	4,4-4,8	mm	0,74	
1.2 Supply-pump pressure	1400	5,1-5,7	bar (kgf/cm²)	0,74	
1.3 Full-load delivery with charge-air pressure	600	32,5-35,5	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1400	49,0-50,0	cm³/1000 strokes	0,74	
1.4 Idle regulation	350	9,0-13,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	min.60,0	cm³/1000 strokes	0	
1.6 Start	2400	23,0-29,0	cm³/1000 strokes	0,74	
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1400	1800	2000
	mm	2,2-3,0(1,9-3,3)	(3,9-5,3)	6,0-6,8(5,7-7,1)	6,2-7,0(5,9-7,3)
2.2 Supply pump	n = rev/min	400		1800	
	bar (kgf/cm²)	1,9-2,5		6,3-6,9	
Overflow delivery	n = rev/min	500			2200
	cm³/10 s	55-110(40-125)			55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2650-2750	0		0,74
	2500	max.17,5		0,74
	2400		(22,0-30,0)	0,74
	2200	41,0-44,0	(40,2-44,8)	0,74
	2000	43,0-45,0	(41,7-46,3)	0,74
	1400		(47,2-51,8)	0,74
	1000	44,5-47,5	(43,7-48,3)	0,74
	700	37,5-40,5	(36,0-42,0)	0,2
	600		(31,0-37,0)	0
switch-off	2200			
idle stop	400-480	0		
	375	4,0-8,0	(2,0-10,0)	
	350		(7,0-15,0)	
End stop	180			
	250			

2.4 Solenoid	cut-in voltage	min. 10,0 V " rated voltage 12V

3. Dimensions

for assembly and adjustment mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max.5,3
A X XK	20,2-22,2
B X XL	9,1-12,4

Observations

K10

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6u
1. Edition
En

VE 4/9 F 2100 R 48
0 460 494 039 Overflow temperature 45° C

supersedes -
company: VWW
engine: EA 162/1,6

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,5-3,9	mm		
1.2 Supply-pump pressure	1500	4,8-5,4	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	33,0-34,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	3,0-7,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm³/1000 strokes		
1.6 Start	2300	12,0-18,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2100
	mm	1,4-2,2(1,1-2,5)	(3,0-4,4)	5,5-6,3(5,2-6,6)
2.2 Supply pump	n = rev/min	400		2100
	bar (kgf/cm²)	2,1-2,7		6,3-6,9
Overflow delivery	n = rev/min	500		2100
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2450-2550	0	
	2400	max. 6,0	
	2300	(11,0-19,0)	
	2100	28,2-30,2 (26,9-31,5)	
	1500	(31,2-35,8)	
	600	20,5-23,5 (19,0-25,0)	
switch-off	2100	0	
Idle stop	2000	max.3,0	
	450	min.2,0	
	415	(2,0-8,0)	
End stop	400		
	470		
2.4 Solenoid	cut-in voltage	min. 10,0 V	
		rated voltage 12V	

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.4,8
+FH	1,8-2,4
A XK	18,6-20,6
B XL	7,5-10,8

Observations

+ operating stroke (cold-start accel.)

K1.1

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6t
1. Edition
En

VE 4/9 F 2100 R 48-2 (P)
0 460 494 102; 103

supersedes -
company: VWW
engine: Typ 2 USA

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,5-3,9	mm		
1.2 Supply-pump pressure	1500	4,8-5,4	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	33,0-34,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	3,0-7,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm³/1000 strokes		
1.6 Start	2300	10,0-18,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2100
	mm	1,4-2,2(1,1-2,5)	(3,0-4,4)	5,5-6,3(5,2-6,6)
2.2 Supply pump	n = rev/min	400		2100
	bar (kgf/cm²)	2,1-2,7		6,3-6,9
Overflow delivery	n = rev/min	500		2100
	cm³/10 s	55-110(40-125)		55.110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2450-2550	0	
	2400	max. 6,0	
	2300	(11,0-19,0)	
	2100	28,2-30,2 (26,9-31,5)	
	1500	(31,2-35,8)	
	600	20,5-23,5 (19,0-25,0)	
switch-off	2100	0	
Idle stop	2000	max.3,0	
	450	min.2,0	
	415	(2,0-8,0)	
End stop	400		
	470		

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.4,8
+FH	1,8-2,4
XK	18,6-20,6
XL	7,5-10,8

Observations

+ operating stroke (cold-start accel.)

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 6,6f
1. Edition
En

VE 6/12 F 1250 R 38-2 (P)

0 460 426 023; 024 Overflow temperature 45° C
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".
Nozzle-and-holder assembly 1 688 901 020

supersedes –
company: IHC
engine: DT 402/3994

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Testoil-ISO 4113

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	3,5-4,1	mm		
1.2 Supply-pump pressure	1000	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	117,5-118,5	cm³/1000 strokes		2,5(4,5)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	500	15,0-21,0	cm³/1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min.90,0	cm³/1000 strokes		
1.6 Start	1300	71,0-79,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1230
	mm	1,3-2,1(1,0-2,4)	(3,1-4,5)	4,5-5,3(4,2-5,6)
2.2 Supply pump	n = rev/min	500		1230
	bar (kgf/cm²)	3,2-3,8		5,5-6,1
Overflow delivery	n = rev/min	500		1250
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1380-1430	0		
	1300		(70,0-80,0)	
	1230	111,0-114,0	(109,5-115,5)	
	1000		(115,0-121,0)	
	700	102,5-106,5	(101,5-107,5)	
	500	92,0- 96,0	(90,2- 97,8)	
switch-off	1250	0		
Idle stop	520-570	0		
	500		(13,0-23,0)	
End stop	260			
	380			

2.4 Solenoid — cut-in voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,4-5,6
MS	0,6-0,8
SVS	max.6,0
XK	20,2-22,1
XL	11,1-14,4

Observations

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 6,6e

1. Edition

En

VE 6/12 F 1250 R 38-1 (P)

0 460 426 018; 019 Overflow temperature 45° C

supersedes company: IHC engine: DT 358/520 B

Setting of the pointer at a stroke of 1 mm in relation to outlet "A". Nozzle-and-holder assembly 1 688 901 020

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,4 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	3,8-4,2	mm		
1.2 Supply-pump pressure	1000	4,9-5,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	94,5-95,5	cm³/1000 strokes		2,5(4,5)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	15,0-21,0	cm³/1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min.100,0	cm³/1000 strokes		
1.6 Start	1300	47,0-53,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1000	1250
	mm	1,2-2,0(0,9-2,3)	(3,7-4,7)	4,5-5,2
2.2 Supply pump	n = rev/min	400		1250
	bar (kgf/cm²)	2,7-3,3		5,5-6,1
Overflow delivery	n = rev/min	500		1250
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1350-1430	0		
	1300		(45,0-55,0)	
	1220	87,5-90,5	(86,0-92,0)	
	1000		(92,0-98,0)	
	700	87,0-91,0	(86,0-92,0)	
	500	76,0-80,0	(74,2-81,8)	
switch-off	1250	0		
Idle stop	400-480	0		
	350		(13,0-23,0)	
End stop	260			
	380			

2.4 Solenoid cut-in voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,4-5,6
MS	0,8-1,0
SVS	max.6,8
A	
B	

Observations

K14

K 14

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 5,8s
1. Edition
En

VE 6/11 F 1250 R 56 (P)

supersedes
company:
engine:

0 460 416 010 011 Overflow temperature 45° C
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm Nozzle-and-holder assembly 1 688 901 020

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	5,0-5,4	mm		
1.2 Supply-pump pressure	800	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	900	82,0-83,0	cm³/1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	450	20,0-22,0	cm³/1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 85,0	cm³/1000 strokes		
1.6 Start	1330	31,0-37,0	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	800	1000
	mm	1,0-1,8(0,7-2,1)	3,3-3,9(2,9-4,3)	(4,5-5,9)
2.2 Supply pump	n = rev/min	400		1250
	bar (kgf/cm²)	2,2-2,8		5,7-6,3
Overflow delivery	n = rev/min	500		1250
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1390-1440	0		
	1330		(29,5-38,5)	
	1300	43,0-49,0	(41,5-50,5)	
	1230	82,2-84,8	(80,8-86,2)	
	900		(79,8-85,2)	
	700	74,0-78,0	(73,3-78,7)	
	500	64,0-68,0	(62,6-69,4)	
switch-off	1250	0		
Idle stop	500-550	0		
	450		(17,5-26,5)	
End stop	280			
	360			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
SVS	1,2-6,0
✗ XK	20,7-22,7
✗ XL	8,4-11,7

Observations

K15

KAS

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IBE 4,0a
1. Edition

En

VE 4/12 F 1300 R 103
0 460 424 004 Overflow temperature 45° C
Nozzle-and-holder assembly 1 688 901 020

supersedes company: Iberica
engine: T 4.236

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1000	4,2-4,6	mm	0,75	
1.2 Supply-pump pressure	1000	5,5-6,1	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	500	63,5-67,5	cm³/1000 strokes	0	2,5(4,5)
Full-load delivery without charge-air pressure	1000	95,5-96,5	cm³/1000 strokes	0,75	
1.4 Idle regulation	300	6,0-12,0	cm³/1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min. 70,0	cm³/1000 strokes	0,75	
1.6 Start	1400	65,0-71,0	cm³/1000 strokes	0	
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	1000	1300
	mm	0,7-1,5(0,4-1,8)	(3,7-5,1)	5,8-6,6(5,5-6,9)
2.2 Supply pump	n = rev/min	500		1300
	bar (kgf/cm²)	3,3-3,9		6,7-7,3
Overflow delivery	n = rev/min	500		1300
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1580-1640	0		0,75
	1400		(63,0-73,0)	0,75
	1300	86,0-89,0	(84,5-90,5)	0,75
	1000		(93,0-99,0)	0,75
	700	80,5-84,5	(79,5-85,5)	0,3
	500		(61,75-69,25)	0
switch-off	1300	0		
Idle stop	370-430	0		
	300		(4,0-14,0)	
End stop	160			
	210			

2.4 Solenoid — cut-in voltage: min. 10,0V, rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,1-5,3
MS	1,1-1,3
SVS	5,0
A XK	20,2-22,2
BX XL	8,6-11,9

Observations

KAG

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 6,6a
1. Edition
En

VE 6/12 F 1100 R 47
0 460 426 009
Overflow temperature 45° C
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes
company: IHC
engine: DT 402/A 65

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Nozzle-and-holder assembly
Pre-stroke setting 0,2 mm 1 688 901 020

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	4,2-4,6	mm		
1.2 Supply-pump pressure	800	5,7-6,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	800	101,5-102,5	cm³/1000 strokes		2,5(4,5)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	375	20,0- 26,0	cm³/1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min. 100,0	cm³/1000 strokes		
1.6 Start	1200	32,0-40,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	800	1000
	mm	1,1-1,9(0,8-2,2)	(3,7-5,1)	5,1-5,9(4,8-6,2)
2.2 Supply pump	n = rev/min	400		1000
	bar (kgf/cm²)	3,7-4,3		6,5-7,1
Overflow delivery	n = rev/min	500		1100
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1240-1290	0		
	1200		(31,0-41,0)	
	1100	96,0-99,0	(94,5-100,5)	
	800		(99,0-105,0)	
	500	86,5-91,5	(85,2- 92,8)	
switch-off	1100	0		
Idle stop	450-500	0		
	375		(18,0-28,0)	
End stop	420			
	480			

2.4 Solenoid — cut-in voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,4-5,6
MS	1,0-1,2
SVS	max.6,0
A X XK	10,2-22,2
B X XL	8,4-11,7

Observations

K17

K17

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PER 5,8b3
1. Edition

En

VE 6/12 F 1300 L 73 Overflow temperature 45° C
0 460 426 020
Nozzle-and-holder assembly
1 688 901 020

supersedes –
company: Perkins
engine: T 6.354.4

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,3 mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	600	2,9-3,5	mm	0,75	
1.2 Supply-pump pressure	600	3,4-4,0	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1000	90,5-94,5	cm³/1000 strokes	0	2,5(4,5)
Full-load delivery without charge-air pressure	1000	97,5-99,5	cm³/1000 strokes	0,75	
1.4 Idle regulation	300	26,0-34,0	cm³/1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min.100,0	cm³/1000 strokes	0	
1.6 Start	1550	2,0-10,0	cm³/1000 strokes	0,75	
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	600	800
	mm	0,7-1,5(0,4-1,8)	(2,5-3,9)	3,9-4,7(3,6-5,0)
2.2 Supply pump	n = rev/min	400		
	bar (kgf/cm²)	2,4-3,0		
Overflow delivery	n = rev/min	500		1300
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1550		(1,0-11,0)	0,75
	1480	42,0-50,0	(41,0-51,0)	0,75
	1300	89,5-93,5	(88,5-94,5)	0,75
	1000		(89,5-95,5)	0
	1000		(95,5-101,5)	0,75
	+700	90,5-95,5	(90,0-96,5)	0,32
	500	82,5-87,5	(81,25-83,75)	0
switch-off	1300	0		
Idle stop	360-420	0		
	300		(25,0-35,0)	
End stop	190	max.85,0		
	360			
	420			
2.4 Solenoid	cut-in voltage	in. 10,0 V rated voltage 12V		

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,1-5,3
MS	1,1-1,3
SVS	max.6,0
A XK	20,2-22,2
B XL	10,6-13,9

Observations

+ LDA-stroke 3,5 mm. Use adjusting nut (46) to correct.

K18

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 5,8 t
1. Edition
En

VE 6/12 F 1350 R64 Overflow temperature 45° C
0 460 426 016
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes –
company: IHC
engine: D 358/PC 11

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm — Nozzle-and-holder assembly 1 688 901 020

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1100	5,0-5,4	mm		
1.2 Supply-pump pressure	1100	5,4-6,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1150	83,0-84,0	cm³/1000 strokes		2,5(4,5)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	500	14,5-20,5	cm³/1000 strokes		2,5(4,5)
1.5 Full-speed regulation	100	min.100,0	cm³/1000 strokes		
1.6 Start	1450	9,0-17,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1100	1250
	mm	1,6-2,4(1,3-2,7	(4,5-5,9)	5,5-6,3(5,2-6,6)
2.2 Supply pump	n = rev/min	400		1350
	bar (kgf/cm²)	2,7-3,3		6,3-6,9
Overflow delivery	n = rev/min	500		1350
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1460-1510	0		
	1450	9,0-17,0	(8,0-18,0)	
	1400	44,0-50,0	(42,0-52,0)	
	1300	79,5-82,5	(78,0-84,0)	
	1150		(80,5-86,5)	
	800	75,0-79,0	(74,0-80,0)	
	500	64,5-69,5	(63,25-70,75)	
switch-off	1350	0		
Idle stop	520-570	0		
	500		(12,5-22,5)	
End stop	250			
	350			

2.4 Solenoid — cut-in voltage: min.10,0V, rated voltage 12V

3. Dimensions

for assembly and adjustment mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,0-1,2
SVS	max.6,0
A XK	20,2-22,2
B XL	15,8-19,8

Observations

K19

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PER 5,8b2
1. Edition
En

VE 4/11 F 1400 R 39 (Overflow temperature 45° C

0 460 414 001 002

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes–
company: Perkins
engine: 4.236 V

All test specifications are valid only for Bosch-Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Nozzle-and-holder assembly 1 688 901 020

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	800	2,0-2,6	mm		
1.2 Supply-pump pressure	800	4,8-5,4	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	800	66,5-67,5	cm³/1000 strokes		2,5(4,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	400	13,0-17,0	cm³/1000 strokes		2,5(4,0)
1.5 Full-speed regulation	100	min. 75,0	cm³/1000 strokes		
1.6 Start	1500	43,0-49,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	500	800	1400
	mm	0,7-1,5(0,4-1,8)	(1,6-3,0)	3,9-4,5(3,5-4,9)
2.2 Supply pump	n = rev/min	500		1400
	bar (kgf/cm²)	3,7-4,3		6,7-7,3
Overflow delivery	n = rev/min	500		1400
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1580	max. 17,0		
	1500		(41,5-50,5)	
	1400	65,0-68,0	(63,8-69,2)	
	800		(64,3-69,7)	
	500	52,0-55,0	(50,1-56,9)	
switch-off	1400	0		
Idle stop	450	5,0-9,0		
	400		(10,5-19,5)	
End stop	--			
	--			
2.4 Solenoid	cut-in voltage			

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,1-5,3
MS	1,2-1,4
SVS	max.4,5
AX XK	
BX XL	

Observations

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung

K20

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 PER 5,8b 4
1. Edition
En

VE 6/12 F 1300 L 73-1 Overflow temperature 45° C
0 460 426 021
Nozzle-and-holder assembly
1 688 901 020

supersedes company: Perkins engine: T 6.354.4

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Testoil-ISO 4113

Pre-stroke setting 0,3 mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	600	2,9-3,5	mm	0,75	
1.2 Supply-pump pressure	600	3,4-4,0	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	1000	90,5-94,5	cm³/1000 strokes	0	2,5(4,5)
Full-load delivery without charge-air pressure	1000	97,5-99,5	cm³/1000 strokes	0,75	
1.4 Idle regulation	300	26,0-34,0	cm³/1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min.100,0	cm³/1000 strokes	0	
1.6 Start	1550	2,0-10,0	cm³/1000 strokes	0,75	
1.7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	600	800
	mm	0,7-1,5(0,4-1,8)	(2,5-3,9)	3,9-4,7(3,6-5,0)
2.2 Supply pump	n = rev/min	400		
	bar (kgf/cm²)	2,4-3,0		
Overflow delivery	n = rev/min	500		1300
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1550		(1,0 -11,0)	0,75
	1480	42,0-50,0	(41,0-51,0)	0,75
	1300	89,5-93,5	(88,5-94,5)	0,75
	1000		(89,5-95,5)	0
	1000		(95,5-101,5)	0,75
	+700	90,5-95,5	(90,0-96,0)	0.32
	500	82,5-87,5	(81,25-83,75)	0
switch-off	1300	0		
Idle stop	360-420	0		
	300		(25,0-35,0)	
End stop	360			
	420			
2.4 Solenoid	cut-in voltage			

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,1-5,3
MS	1,1-1,3
SVS	max.6,0
A XK	20,2-22,2
B XL	10,6-13,9

Observations

without electrical shutoff device
+ LDA-stroke 3,5 mm. Use adjusting nut (46) to correct.

K21

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

K22

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 6,6i
1. Edition
En

VE 6/12 F 1100 R 102 Overflow temperature 45° C
0 460 426 025
Nozzle-and-holder assembly
1 688 901 020

supersedes company: IHC
engine: DT 402

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	600	3,4-3,8	mm	0,75	
1.2 Supply-pump pressure	600	5,0-5,6	bar (kgf/cm²)	0,75	
1.3 Full-load delivery with charge-air pressure	600	80,5-83,5	cm³/1000 strokes	0	2,5(4,5)
Full-load delivery without charge-air pressure	800	99,0-100,0	cm³/1000 strokes	0,75	
1.4 Idle regulation	375	20,0-26,0	cm³/1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min. 90,0	cm³/1000 strokes	0	
1.6 Start	1200	33,0-39,0	cm³/1000 strokes	0,75	
1.7 Load-dependent port-closing	-	-			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	600	700
	mm	1,2-2,0(0,9-2,3)	(2,9-4,3)	3,6-4,2(3,2-4,6)
2.2 Supply pump	n = rev/min	400		1100
	bar (kgf/cm²)	3,9-4,5		7,0-7,6
Overflow delivery	n = rev/min	500		1100
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1220-1280	0		0,75
	1200		(31,0-41,0)	0,75
	1080	97,0-100,0	(95,5-101,5)	0,75
	800		(96,5-102,5)	0,75
	600	88,0- 91,0	(85,75-93,25)	0,2
	600		(78,25-85,75)	0
switch-off	1100	0		
Idle stop	420-500	0		
	375		(18,0-28,0)	
End stop	400			
	460			

2.4 Solenoid	cut-in voltage	min. 10,0 V rated voltage 12V

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,6-5,8
MS	1,5-1,7
SVS	max.6,0
A XK	20,2-22,2
B XL	10,2-13,5

Observations

K22

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

K22

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 IHC 5,8s 1
1. Edition
En

VE 6/12 F 1100 R 52 (P)
0 460 426 011
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Overflow temperature 45° C

supersedes -
company: IHC
engine: D 358/A 54

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm

Nozzle-and-holder assembly 1 688 901 020

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	700	4,5-4,9	mm	0,67	
1.2 Supply-pump pressure	700	5,7-6,3	bar (kgf/cm²)	0,67	
1.3 Full-load delivery with charge-air pressure	500	73,0-77,0	cm³/1000 strokes	0	2,5(4,5)
Full-load delivery without charge-air pressure	800	94,0-95,0	cm³/1000 strokes	0,67	
1.4 Idle regulation	380	16,0-20,0	cm³/1000 strokes	0	2,5(4,5)
1.5 Full-speed regulation	100	min.100,0	cm³/1000 strokes	0	
1.6 Start	1200	16,0-24,0	cm³/1000 strokes	0,67	
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	400	700	900
	mm	1,7-2,5(1,4-2,8)	(4,0-5,4)	5,8-6,6(5,5-6,9)
2.2 Supply pump	n = rev/min	400		1100
	bar (kgf/cm²)	4,5-5,1		6,9-7,5
Overflow delivery	n = rev/min	500		1100
	cm³/10 s	55-110(40-125)		55-110(40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1220-1270	0		0,67
	1200		(15,0-25,0)	0,67
	1170	57,0-63,0	(55,0-65,0)	0,67
	1080	86,8-89,2	(85,0-91,0)	0,67
	800		(91,5-97,5)	0,67
	+500	83,0-86,0	(81,5-87,5)	0,3
	500		(71,2-78,8)	0
switch-off	1100	0		
Idle stop	440-490	0		
	380		(13,0-23,0)	
End stop	380	min.75,0		
	450	max.75,0		

2.4 Solenoid — cut-in voltage

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,4-5,6
MS	1,3-1,5
SVS	max.6,0
A	20,2-22,2
B	10,2-13,5

Observations

+ LDA-stroke 4,5 mm
Use adjusting nut (46) to correct.

K23

K23

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Vol 3,6d
1. Edition
En

VE 6/11 F 1500 L 19-3
0 460 416 005
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Overflow temperature 45° C

supersedes company: Volvo
engine: MD 40 A (C)

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04) mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,0-4,4	mm		
1.2 Supply-pump pressure	1500	6,0-6,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	43,0-44,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	9,0-13,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.70,0	cm³/1000 strokes		
1.6 Start	1650	27,0-33,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500
	mm	1,4-2,4(1,2-2,6)	(3,5-4,9)
2.2 Supply pump	n = rev/min	500	1500
	bar (kgf/cm²)	2,5-3,0	6,0-6,5
Overflow delivery	n = rev/min	500	1500
	cm³/10 s	55-111(40-126)	55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1800-1900	0		
	1750	max.14,0		
	1650		(26,0-34,0)	
	1500	42,0-45,0	(41,2-45,8)	
	1000		(41,2-45,8)	
	600	30,5-33,5	(29,0-35,0)	
switch-off	1500	0		
Idle stop	420-480	0		
	350		(7,0-15,0)	
End stop	100	min.65		
	220	max.60		

2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V

3. Dimensions

Designation	for assembly and adjustment mm
K	---
KF	5,9-6,1
MS	1,7-1,9
SVS	max.2,6
A	
B	

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Vol 3,6b
1. Edition
En

VE 6/11 F 1500 L 19-1
0 460 416 003
Overflow temperature 45° C
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes company: Volvo
engine: TMD 40 A

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04) mm

Testoil-ISO 4113

1. Settings

	Rot speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,0-4,4	mm		
1.2 Supply-pump pressure	1500	6,0-6,5	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	54,5-55,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	9,0-13,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.80,0	cm³/1000 strokes		
1.6 Start	1600	32,0-38,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500
	mm	1,6-2,6(1,4-2,8)	(3,5-4,9)
2.2 Supply pump	n = rev/min	500	1500
	bar (kgf/cm²)	2,5-3,0	6,0-6,5
Overflow delivery	n = rev/min	500	1500
	cm³/10 s	55-111(40-126)	55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press bar (kgf/cm²)
End stop	1780-1880	0		
	1700	max. 18,0		
	1600		(31,0-39,0)	
	1450	54,0-57,0	(53,2-57,8)	
	1000		(52,7-57,3)	
	600	42,0-45,0	(40,5-46,5)	
switch-off	1500	0		
Idle stop	420-480	0		
	350		(7,0-15,0)	

2.4 Solenoid	cut-in voltage	min. 10 V
		rated voltage 12 V

3. Dimensions

Designation	for assembly and adjustment mm
K	--
KF	5,9-6,1
MS	1,7-1,9
SVS	max.2,6
A XK	9,0-14,0
B XL	8,1-11,3

Observations

L1

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 Vol 3,6h
1. Edition
En

VE 6/11 F 1800 L 18-2
0 460 416 015

Overflow temperature 45° C

superseries
company: Volvo
engine: TD 40 A

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/ .

Pre-stroke setting 0,3 mm ± 0,02 (0,04)

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	2,7-3,1	mm	0,73	
1.2 Supply-pump pressure	1500	6,7-7,3	bar (kgf/cm²)	0,73	
1.3 Full-load delivery with charge-air pressure	500	45,0-48,0	cm³/1000 strokes	0	2,5(3,0)
Full-load delivery without charge-air pressure	1500	62,5-63,5	cm³/1000 strokes	0,73	
1.4 Idle regulation	325	7,0-13,0	cm³/1000 strokes	0	2,5(3,0)
1.5 Full-speed regulation	100	max. 60,0	cm³/1000 strokes	0	
1.6 Start	2000	18,0-24,0	cm³/1000 strokes	0,73	
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1100	1500	1800
	mm	0,7-1,5(0,4-1,8)	(2,2-3,6)	3,7-4,5(3,4-4,8)
2.2 Supply pump	n = rev/min	400		1800
	bar (kgf/cm²)	2,4-3,0		7,7-8,3
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2100-2180	0		0,73
	2070	max.6,0		0,73
	2000		(17,0-25,0)	0,73
	1800	56,7-59,3	(55,7-60,3)	0,73
	1500		(60,7-65,3)	0,73
	* 500	50,5-52,5	(48,5-54,5)	0,28
	500	45,0-48,0	(43,5-49,5)	0
switch-off	1800	0		
Idle stop	430-500	0		
	325		(6,0-14,0)	

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,9-6,1
MS	1,2-1,4
SVS	max.4,5
A XK	20,1-22,1
B X XL	10,4-16,4

Observations
+ LDA-stroke 4,0 mm
Use adjusting nut (46) to correct.

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
1980 by Robert Bosch GmbH. Postfach 50, D-7000 Stuttgart 1. Printed in the Federal Republic of Germany
imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH
4.82

L2

L2

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,5e
1. Edition
En

VE 4/9 F 1500 R 25-2
R 25-2 P Overflow temperature 45° C
0 460 494 017
0 460 494 018

supersedes
company:
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Testoil-ISO 4113

Pre-stroke setting mm

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,5-3,9	mm		
1.2 Supply-pump pressure	1500	5,1-5,7	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	26,5-27,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.38,0	cm³/1000 strokes		
1.6 Start	1560	19,0-23,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500
	mm	1,3-2,1(1,0-2,4)	(3,0-4,4)
2.2 Supply pump	n = rev/min	400	
	bar (kgf/cm²)	2,4-3,0	
Overflow delivery	n = rev/min	500	1500
	cm³/10 s	55-111(40-126	55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1595-1640	0		
	1560		(17,0-25,0)	
	1500	27,5-30,5	(26,7-31,3)	
	1000		(24,7-29,3)	
	600	21,0-25,0	(20,0-26,0)	
switch-off electr.	400	bei 2,5 V	0	
Idle stop	700	max. 2,0		
	415		(4,0-12,0)	
End stop	400	min.15,0		
	500	max.21,0		

2.4 Solenoid	cut-in voltage	10 V
		rated voltage 12 V

3. Dimensions

for assembly and adjustment mm

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.3,6
* FH	1,8-2,4
A	9,0-14,0
B	10,4-15,6

Observations

+ operating stroke (cold-start accel.)

L3

L3

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,5 bl
1. Edition
En

VE 4/9 F 2500 R 16-3
R 16-3 P Overflow temperature 45° C

supersedes
company: VW
engine: EA 086/10

0 460 494 028
0 460 494 029

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment
see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,6-4,0	mm		
1.2 Supply-pump pressure	1500	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	29,9-30,9	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	475	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.39,0	cm³/1000 strokes		
1.6 Start	2670	13,5-19,5	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2200
	mm	1,4-2,2(1,1-2,5)	(3,1-4,5)	6,3-7,1(6,0-7,3)
2.2 Supply pump	n = rev/min	400		2200
	bar (kgf/cm²)	1,4-2,0		5,9-6,5
Overflow delivery	n = rev/min	500		2500
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel delivenes

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2820	max.7,0		
	2670		(12,5-20,5)	
	2500	25,4-28,0	(24,4-29,0)	
	1500		(28,1-32,7)	
	600	17,9-20,9	(16,4-22,4)	
switch-off electr.	400	bei 2,5 V	0	
Idle stop	1200	max. 3,0		
	650	max. 4,0		
	475		(4,0-12,0)	
End stop	400	min. 18,0		
	500	max. 20,0		

2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.3,6
* FH	1,8-2,4
**	9,0-14,0
A	9,4-12,6
B	

Observations
* Operating stroke (cold-start accel.)
** Two piece control lever
XK = 18,6-20,6 mm
XL = 9,1-12,8 mm

L4

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,5f
1. Edition
En

VE 4/9 F 1500 R 25-3
R 25-3 P Overflow temperature 45° C
0 460 494 035
0 460 494 036

supersedes
company: VWW
engine: EA 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,5-3,9	mm		
1.2 Supply-pump pressure	1500	5,4-6,0	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.38,0	cm³/1000 strokes		
1.6 Start	1550	20,0-24,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500
	mm	1,4-2,2(1,1-2,5)	(3,0-4,4)
2.2 Supply pump	n = rev/min	400	
	bar (kgf/cm²)	2,6-3,2	
Overflow delivery	n = rev/min	500	1500
	cm³/10 s	55-111(40-126)	55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1680	0		
	1610	max.8,0		
	1550		(18,0-26,0)	
	1500		(26,7-31,3)	
	600	17,0-20,0	(15,5-21,5)	
switch-off electr.	400	bei 2,5 V	0	
Idle stop	450-550	0		
	415		(4,0-12,0)	
End stop	400	min.15,0		
	500	max.21,0		

2.4 Solenoid	cut-in voltage	10 V
		rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.3,6
XK	19,5-21,5
XL	9,2-12,6
A	
B	

Observations

L5

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VWW 1,5c
1. Edition

En

VE 4/9 F 2000 R 25
R 25 P
0 460 494 010
0 460 494 011

Overflow temperature 45° C

supersedes
company:
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,5-3,9	mm		
1.2 Supply-pump pressure	1500	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm³/1000 strokes		
1.6 Start	2050	8,0-12,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1800
	mm	1,3-2,1(1,0-2,4)	(3,0-4,4)	4,5-5,3(4,2-5,6)
2.2 Supply pump	n = rev/min	400		2000
	bar (kgf/cm²)	1,4-2,0		5,4-6,0
Overflow delivery	n = rev/min	500		2000
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2060-2160	0		
	2050		(6,0-14,0)	
	2030	17,0-23,0	(16,0-24,0)	
	2000	24,5-26,5	(23,2-27,8)	
	1500		(26,7-31,3)	
	600	17,0-20,0	(15,5-21,5)	
switch-off electr.	400	bei 2,5 V	0	
Idle stop	700	max. 2,0		
	415		(4,0-12,0)	
End stop	400	min. 15,0		
	50	max. 21,0		
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V		

3. Dimensions

for assembly and adjustment mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.3,6
+FH	1,8-2,4
A	9,0-14,0
B	10,4-15,6

Observations

* operating stroke (cold-start accel.)

L6

L6

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,5d
1. Edition
En

VE 4/9 F 1800 R 25-1
R 25-1 P Overflow temperature 45° C
0 460 494 012
0 460 494 013

supersedes
company: VWW
engine: EA 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,5-3,9	mm		
1.2 Supply-pump pressure	1500	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.40,0	cm³/1000 strokes		
1.6 Start	1900	4,0-10,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	1800
	mm	1,3-2,1(1,0-2,4)	(3,0-4,4)	4,6-5,4(4,3-5,7)
2.2 Supply pump	n = rev/min	400		1800
	bar (kgf/cm²)	1,4-2,0		4,8-5,4
Overflow delivery	n = rev/min	500		1800
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1900		(3,0-11,0)	
	1800	26,0-29,0	(25,2-29,8)	
	1500		(26,7-31,3)	
	600	16,5-20,5	(15,5-21,5)	
switch-off electr.	400	bei 2,5 V	0	
Idle stop	700	max. 2,0		
	415		(4,0-12,0)	
End stop	400	min. 15,0		
	500	max. 21,0		

2.4 Solenoid	cut-in voltage	min 10 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	max.3,6
*FH	1,8-2,4
A	9,0-14,0
B	10,4-15,6

Observations

* operating stroke (cold-start accel.)

L7

L7

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,5a1
1. Edition
En

VE 4/9 F 2500 R 16
R 16 P
0 460 494 002
0 460 494 003

Overflow temperature 45° C

supersedes
company: VW
engine: EA 086/10

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,6-4,0	mm		
1.2 Supply-pump pressure	1500	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	29,9-30,9	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.39,0	cm³/1000 strokes		
1.6 Start	2670	13,5-19,5	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2000
	mm	1,4-2,2(1,1-2,5)	(3,1-4,5)	6,3-7,1(6,0-7,4)
2.2 Supply pump	n = rev/min	400		2200
	bar (kgf/cm²)	1,4-2,0		5,9-6,5
Overflow delivery	n = rev/min	500		2500
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2800	max.7,0		
	2670		(12,5-20,5)	
	2500	25,7-27,7	(24,4-29,0)	
	1500		(28,1-32,7)	
	600	17,9-20,9	(15,4-22,4)	
switch-off electr.	400	bei 2,5 V	0	
Idle stop	1200	max. 3,0		
	415		(4,0-12,0)	
End stop	400	min.18,0		
	500	max.20,0		

2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.3,6
* FH	1,8-2,4
**	9,0-14,0
A	9,4-12,0
B	

Observations
* Operating stroke (cold-start accel.)
** Two piece control lever
XK = 18,6-20,6 mm
XL = 9,1-12,8 mm

L8

L8

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,6n
1. Edition
En

VE 4/9 F 2500 R 16-5
R 16-5 P Overflow temperature 45° C
0 460 494 032
0 460 494 033

supersedes
company: VW
engine: 1,6 L

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	4,8-5,2	mm		
1.2 Supply-pump pressure	1500	4,5-5,1	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	32,0-33,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	6,5-10,5	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.35,0	cm³/1000 strokes		
1.6 Start	2450	14,0-20,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2100
	mm	2,5-3,4(2,2-3,6)	(4,3-5,7)	7,0-7,8(6,7-8,1)
2.2 Supply pump	n = rev/min	400		2250
	bar (kgf/cm²)	1,7-2,3		6,3-6,9
Overflow delivery	n = rev/min	500		
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2540	5,0-13,0		
	2450		(13,0-21,0)	
	2250	27,8-30,8	(27,0-31,6)	
	1500		(30,2-34,8)	
	600	21,0-24,0	(19,5-25,5)	
switch-off electr.	400	bei 2,5 V	0	
Idle stop	1200	max. 4,0		
	600	max. 6,0		
	415		(4,5-12,5)	
End stop	400	min.20,0		
	50	max.22,0		

2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.4,8
* FH	1,8-2,4
A XK	18,6-20,6
B XL	9,1-12,8

Observations

* operating stroke (cold-start accel.)

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,5a
1. Edition

En

VE 4/9 F 2500 R 16-2
R 16-2 P Overflow temperature 45° C

supersedes
company: VW
engine: EA 086/10

0 460 494 006
0 460 494 007

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,6-4,0	mm		
1.2 Supply-pump pressure	1500	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	29,9-30,9	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	415	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.39,0	cm³/1000 strokes		
1.6 Start	2670	13,5-19,5	cm³/1000 strokes		
1.7 Load-dependent port-closing					

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2000
	mm	1,4-2,2(1,1-2,5)	(3,1-4,5)	6,3-7,1(6,0-7,4)
2.2 Supply pump	n = rev/min	400		2200
	bar (kgf/cm²)	1,4-2,0		5,9-6,5
Overflow delivery	n = rev/min	500		2500
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)	
End stop	2800	max. 7,0		
	2670	(12,5-20,5)		
	2500	25,7-27,7 (24,4-29,0)		
	1500	(28,1-32,7)		
	600	17,9-20,9 (16,4-22,4)		
switch-off electr.	400	bei 2,5 V 0		
Idle stop	1200	max.3,0		*
	415	(4,0-12,0)		
End stop	400	min.18,0		**
	500	max.20,0		

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.3,6
* FH	1,8-2,4
**	9,0-14,0
A	9,4-12,0
B	

Observations
Operating stroke (cold-start accel.)
Two piece control lever
XK = 18,6-20,6 mm
XL = 9,1-12,8 mm

L10

L10

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VWW 1,5b
1. Edition
En

VE 4/9 F 2500 R 16-4 (P)
0 460 494 030 (031)

supersedes
company: VW
engine: EA 086/10

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1500	3,6-4,0	mm		
1.2 Supply-pump pressure	1500	4,0-4,6	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1500	29,9-30,9	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	475	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.39,0	cm³/1000 strokes		
1.6 Start	2670	13,5-19,5	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1000	1500	2200
	mm	1,4-2,2(1,1-2,5)	(3,1-4,5)	6,3-7,1(6,0-7,3)
2.2 Supply pump	n = rev/min	400		2200
	bar (kgf/cm²)	1,4-2,0		5,9-6,5
Overflow delivery	n = rev/min	500		2500
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2820	max. 7,0	
	2670	(12,5-20,5)	
	2500	25,4-28,0 (24,4-29,0)	
	1500	(28,1-32,7)	
	600	17,9-20,9 (16,4-22,4)	
switch-off electr.	400	bei 2,5 V 0	
Idle stop	1200	max.3,0	
	650	max.4,0	
	475	(4,0-12,0)	
End stop	400	min.18,0	
	500	max.20,0	

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	max.3,6
*FH	1,8-2,4
**	9,0-14,0
A	9,4-12,6
B	

Observations

* Operating stroke (cold-start accel.)

** Two piece control lever
XK = 18,6-20,6 mm
XL = 9,1-12,8 mm

L11

L11

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,0 b
1. Edition
En

VE 4/9 F 2200 L 28
L 28 P
0 460 494 009
0 460 494 015 Overflow temperature 45° C

supersedes
company: Opel
engine: TL 0129

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,18 mm ± 0,02 (0,04) mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000	6,1-6,7	mm		
1.2 Supply-pump pressure	2000	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	35,0-36,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	250	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.50,0	cm³/1000 strokes		
1.6 Start	2420	12,0-18,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	2000	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1200	2000	2200
	mm	2,3-3,3(2,1-3,5)	(5,7-7,1)	6,8-7,8(6,6-8,0)
2.2 Supply pump	n = rev/min	400		2200
	bar (kgf/cm²)	2,4-3,0		6,7-7,3
Overflow delivery	n = rev/min	500		2200
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2500	max. 6,0	
	2450	(11,0-19,0)	
	2230	31,7-35,3 (31,2-35,8)	
	1000	(32,3-37,8)	
	600	30,0-34,0 (29,0-35,0)	
switch-off	400		
	70	0	
Idle stop	370-470	0	
	250	(4,0-12,0)	
2.4 Solenoid	cut-in voltage	10 V	
		rated voltage 12V	

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max.4,2
A	2,6-7,6
B	10,4-15,6

Observations

Clearance between idle position and stop for increased idling 0,5-1,0 mm.

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.

4.82

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,0 b2
1. Edition
En

VE 4/9 F 2100 L 28-2
L 28-2 P

supersedes company: Opel
engine: TL 1029-2 1

0 460 494 060
0 460 494 061 Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,18 mm ± 0,02 (0,04) mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000	5,7-6,3	mm		
1.2 Supply-pump pressure	2000	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1000	35,5-36,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	250	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.50,0	cm³/1000 strokes		
1.6 Start	2420	12,0-18,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	2000	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1200	2000	2200
	mm	2,3-3,2(2,1-3,5)	(5,3-6,7)	6,8-7,8(6,6-8,0)
2.2 Supply pump	n = rev/min	400		2200
	bar (kgf/cm²)	2,4-3,0		6,7-7,3
Overflow delivery	n = rev/min	500		2100
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	max.6,0		
	2420		(11,0-19,0)	
	2230	31,2-34,8	(30,7-35,3)	
	1000		(33,7-38,3)	
	600	30,0-34,0	(29,0-35,0)	
switch-off	400			
electr.	70	0		
Idle stop	370-470	0		
	250		(4,0-12,0)	

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max.4,2
A	2,6-7,6
B	10,4-15,6

Observations

L13

L13

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,1c
1. Edition
En

VE 4/9 F 2200 L 12
0 460 494 001

supersedes
company: Opel
engine: TL 1755

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting -- mm

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000	7,5-7,9	mm		
1.2 Supply-pump pressure	2000	6,3-7,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1250	37,0-38,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	300	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	50	min. 45.0	cm³/1000 strokes		
1.6 Start	2420	11,0-17,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1250	2000	2200
	mm	0,8-1,6(0,5-1,9)	3,8-4,6(3,5-4,9)	(7,0-8,4)	7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min	500		2000	
	bar (kgf/cm²)	2,7-3,7		6,3-7,3	
Overflow delivery	n = rev/min	500			2200
	cm³/10 s	55-111(40-126)			55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2620-2750	0		
	2500	max.6,0		
	2420		(10,0-18,0)	
	2230	30,0-32,5	(28,95-33,55)	
	1250		(35,2-39,8)	
	600	29,5-32,5	(28,0-34,0)	
switch-off	2000	0		
Idle stop	380-460	0		
	300		(4,0-12,0)	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V		

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max.4,8
A	2,6-7,6
B	10,4-15,6

Observations

Clearance between idle position and stop for increased idling 0,5-1,0 mm.

L14

L14

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,0 b1
1. Edition
En

VE 4/9 F 2200 L 28-1
L 28-1 P
0 460 494 025
0 460 494 026

supersedes
company:
engine:

Overflow temperature 45° C

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,18 mm ± 0,02 (0,04) mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000	6,1-6,7	mm		
1.2 Supply-pump pressure	2200	6,8-7,4	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1100	37,5-38,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	250	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 50,0	cm³/1000 strokes		
1.6 Start	2400	15,0-21,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	2000	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	1250	2000	2200
	mm	2,9-3,9(2,7-4,1)	(5,7-7,1)	6,9-7,9(6,7-8,1)
2.2 Supply pump	n = rev/min	400		
	bar (kgf/cm²)	2,5-3,1		
Overflow delivery	n = rev/min	500		2200
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	2500	max. 6,0		
	2400		(14,0-22,0)	
	2230	31,5-35,5	(31,2-35,8)	
	1100		(35,7-40,3)	
	600	32,0-36,0	(31,0-37,0)	
switch-off	2200	0		
Idle stop	370-470	0		
	250		(4,0-12,0)	
2.4 Solenoid	cut-in voltage	min. 10 V		
		rated voltage 12V		

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,7-5,9
MS	1,7-1,9
SVS	max.3,6
XK	20,0-22,0
XL	10,8-14,6
A	
B	
X	

Observations

C15

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VOL 3,6 g
1. Edition
En

VE 6/11 F 1500 L 19-6
0 460 416 013
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Overflow temperature 45° C

supersedes company: Volvo
engine: T AMD 40-A

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting 0,2 mm ± 0,02 (0,04)

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	1200	2,6-3,0	mm		
1.2 Supply-pump pressure	1200	4,7-5,3	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1400	69,5-70,5	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle regulation	350	17,0-23,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min. 70,0	cm³/1000 strokes		
1.6 Start	1550	37,0-43,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	--	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	800	1200	1500
	mm	1,1-1,9(0,8-2,2)	(2,1-3,5)	3,8-4,6(3,5-4,9)
2.2 Supply pump	n = rev/min	400		1500
	bar (kgf/cm²)	1,9-2,5		5,7-6,3
Overflow delivery	n = rev/min	500		1500
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes		Charge-air press. bar (kgf/cm²)
End stop	1650	max.15,0		
	1550		(36,0-44,0)	
	1400		(67,7-72,3)	
	1200	67,0-69,0	(65,7-70,3)	
	600	53,5-58,5	(53,0-59,0)	
switch-off	1500	0		
Idle stop	500-580	0		
	350		(16,0-24,0)	
End stop	100-120	min.70,0		
	220	max.52,0		

2.4 Solenoid — cut-in voltage: min. 10 V, rated voltage 12V

3. Dimensions

for assembly and adjustment

Designation	mm
K	--
KF	5,9-6,1
MS	1,4-1,6
SVS	max.2,3
AX XK	18,7-20,7
BX XL	7,8-11,1

Observations

Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 OPE 2,1d
1. Edition
En

VE 4/9 F 2200 L 27
0 460 494 008

Overflow temperature 45° C

supersedes -
company: Opel
engine: TL 1755

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment see VDT-W-460/..

Pre-stroke setting mm

Testoil-ISO 4113

1. Settings

	Rot. speed rev/min	Settings		Charge-air press. bar (kgf/cm²)	Difference in delivery cm³
1.1 Timing device travel	2000	7,5-7,9	mm		
1.2 Supply-pump pressure	2000	6,2-6,8	bar (kgf/cm²)		
1.3 Full-load delivery with charge-air pressure	1250	36,0-37,0	cm³/1000 strokes		2,5(3,0)
Full-load delivery without charge-air pressure	----	--	cm³/1000 strokes		
1.4 Idle regulation	250	6,0-10,0	cm³/1000 strokes		2,5(3,0)
1.5 Full-speed regulation	100	min.50,0	cm³/1000 strokes		
1.6 Start	2420	13,0-19,0	cm³/1000 strokes		
1.7 Load-dependent port-closing	2000	--			

2. Test Specifications

checking values in brackets ( )

2.1 Timing device	n = rev/min	600	1250	2000
	mm	0,9-1,9(0,7-2,1)	3,8-4,6(3,5-4,9)	(7,0-8,4) 7,7-8,5(7,4-8,8)
2.2 Supply pump	n = rev/min	600		2200
	bar (kgf/cm²)	3,0-3,6		6,7-7,3
Overflow delivery	n = rev/min	500		2200
	cm³/10 s	55-111(40-126)		55-111(40-126)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm³/1000 strokes	Charge-air press. bar (kgf/cm²)
End stop	2500	max.6,0	
	2450	(12,0-20,0)	
	2230	30,7-33,3 (29,7-34,3)	
	1250	(34,2-38,8)	
	600	31,5-34,5 (30,0-36,0)	
switch-off electr.	70	bei 2,5 V 0	
Idle stop	370-470	0	
	250	(4,0-12,0)	
2.4 Solenoid	cut-in voltage	min. 10 V rated voltage 12V	

3. Dimensions

for assembly and adjustment

Designation	mm
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	4,6
A	2,6-7,6
B	11,4-15,6

Observations
Clearance between idle position and stop for increased idling 0,5-1,0 mm.

L17

L17

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 SAV 3,0a 1
1. Edition
En

VA 4/100 H 1600 BR 101
0 460 304 055
Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

supersedes
company Renault
engine 599-01/03

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,1 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	800	4,0-5,0	mm		
1 2 Supply pump pressure	800	4,3-4,8	kp/cm²		
1 3 Full-load delivery without charge-air pressure	1000	53,5-54,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1 4 Idle speed regulation	300	7,0-13,0	cm³/1000 strokes		3,0
1 5 Start	100	mind.76,0	cm³/1000 strokes		
1 6 Full-load speed regulation	1670	34,0-42,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	44-530 (370-560)	800	1450-1570
	mm	Start	(3,7-5,3)	13,7-14,4(13,4-14,7)
2 2 Supply pump	rev/min		800	1500
	kp/cm²		(4,1-5,0)	6,8-7,4(6,6-7,6)
Overflow delivery	rev/min	500	1500	
	cm³/10 s	mind. 25	85-150(70-165	

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes	Charge-air pressure kp/cm²
End stop	Full	1750-1810 (1730-1830)	0	
		1750	max. 14,0	
		1670	(33,0-43,0)	
		1600	46,75-49,25 (45,75-50,25)	
		1000	(53,0-55,0)	
		500	48,75-50,25 (47,75-51,25)	
	Stop	1600	0	
Idle stop	Full	320-420 (300-440)	0	
		300	(6,0-14,0)	
	Start	100	mind. 76,0	
		110-210		

L18

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 45 - 8° δ = 60 + 8°	Pump Dimension IV = - mm Dimension V = - mm

Instructions on special adjustment	Test sequence

Drive the pump at 100 min^{-1} below rated speed and bleed the damping device. (On design 2 at the bleeding screw, on design 1 and 3 by loosening the damping bushing. Tighten the damping bushing again afterwards and with design 2 see that the center mark on the screw plug points upwards). Switch off the test bench.

Set camshaft projection of load stop to stop plate (dimension "a").

Set idle speed before full-load speed regulation

Set idle stop screw (dimension "c").
Screw back the stop screw of the load lever.
Limit the path of the stop bolt (dimension "b") (e.g. with setting gauge EFEP 429 - 1 687 970 019) and move up against load lever with hooked-in cylindrical helical coiled spring.

Set idle quantity at the control throttle. (a)
Then position the speed lever so that it touches the idle stop.
(In doing this do not turn the control throttle, but, if necessary, adjust the speed lever after loosening the clamping screw on the link.

Set idle speed regulation. (b)
Place the stop screw of the load lever against the lobe of the speed lever.
Remove the fixing for dimension "b".

Check the starting delivery. (c)

Set the regulation at the max.-speed stop-screw. (d)

Adjust full-load delivery. Correct by adjusting the delivery stop. (e)
If full-load delivery has been changed, check (a), (b) and (d) again.

Tests according to section B. (f)

Check fuel deliveries according to section C. (g)

Check by measuring. (h)
To do this limit dimension "b" again (see above) and move up against load lever with hooked-in cylindrical helical coiled spring. If necessary, correct delivery within the tolerance of dimension "b".
Then move speed lever up against idle stop screw and, if necessary, adjust the stop screw of the load lever.
Remove the fixing for dimension "b".

Carry out a stop check. (i)

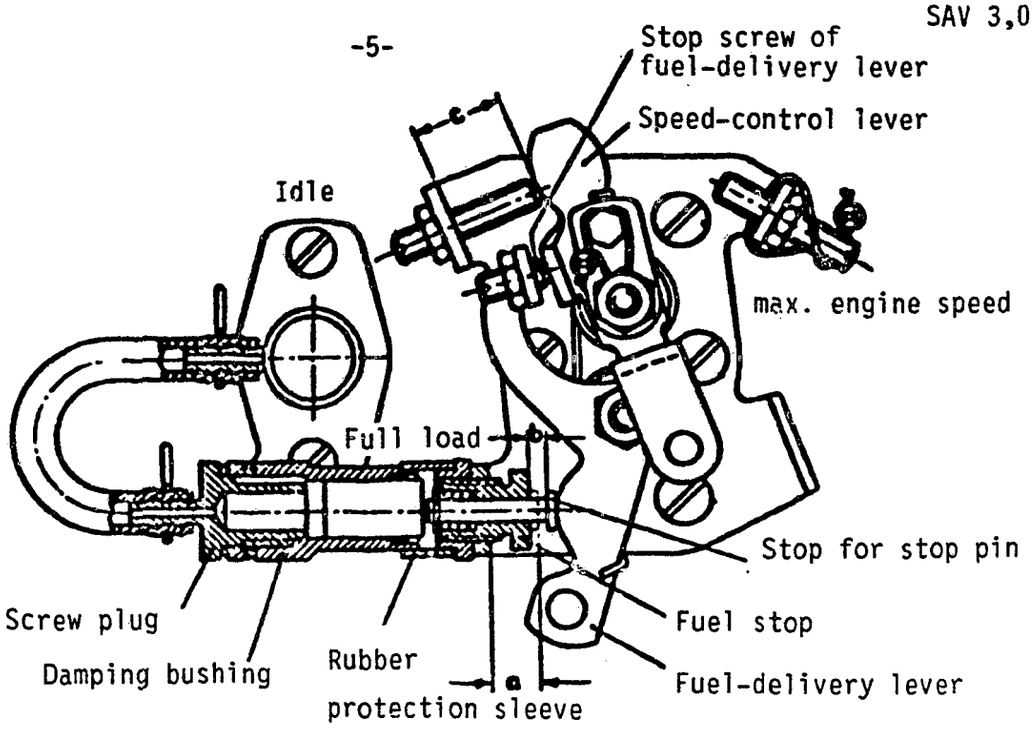
Damper check!

Check whether hole in rubber protection sleeve faces downwards.
Run pump at 100 min-1 below rated speed.
Quickly move speed-control lever to idle position. Stop pin must move rapidly in direction of injected-quantity lever.
Move speed-control lever quickly to max. position. Within the stated time, the stop pin must be pressed against its mechanical stop by the injected-quantity lever. Leaks at the damper need not be taken into account; one droplet per minute is permissible.

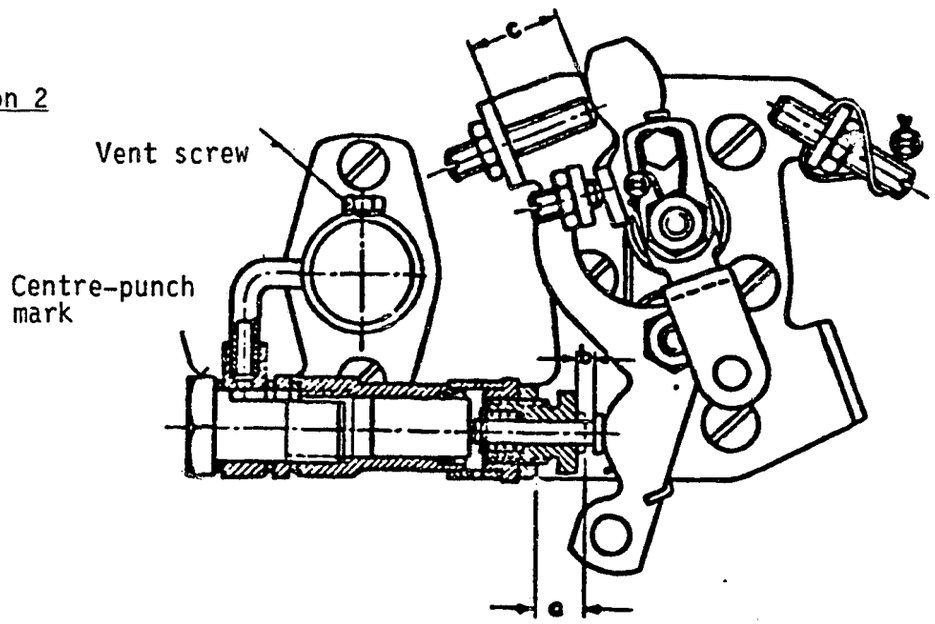
Settings:

Dimension I	=	7.0 mm	"Retarded"	Dimension "b" = 3 ± 0.2 mm
Dimension II	=	14.0 mm	"Total"	Dimension "c" = 14 ± 1 mm
Dimension III	=	35.8 mm	"Spring inst."	Running time against inj-quant.lever = 2-4 s
Dimension "a"	=	10 ± mm		

Version 1



Version 2



Version 3